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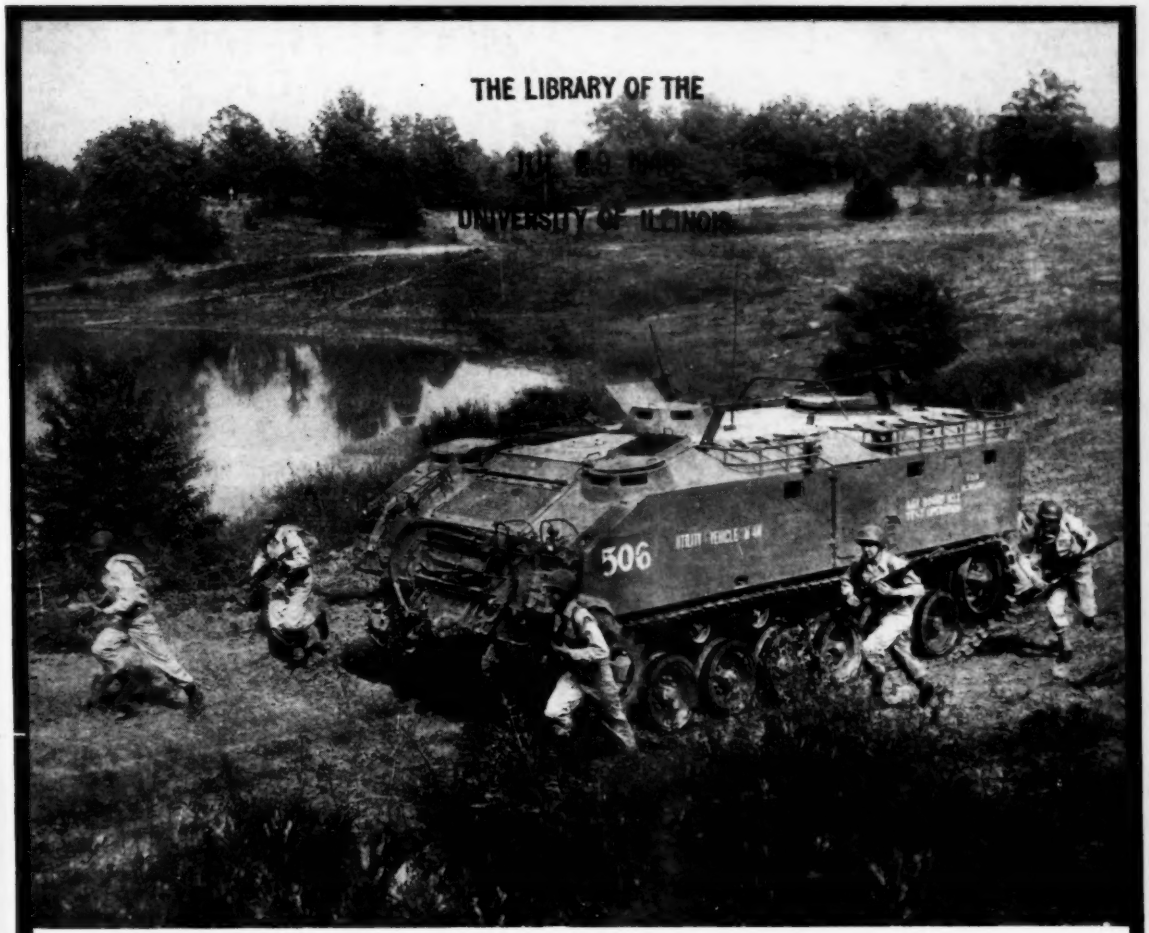

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(See Page 36)

JULY-AUGUST, 1948

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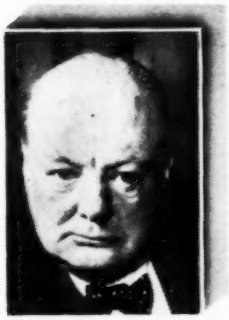

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FORT KNOX, KENTUCKY, . . .

. . . often referred to during World War II as the "third largest city in Kentucky," is universally known as the Home of American Armor. It is here that the development in mechanization of elements of our ground forces has been concentrated.

The history of Fort Knox dates back to 1903, when it came under consideration as a reservation, and maps of the section were drawn up and presented to the War Department together with plans and sketches. Soon thereafter some 10,000 acres were leased and 30,000 troops were moved into the area to participate in the Army's first large-scale maneuvers.

Plans to erect a camp lay idle to 1918 when funds were appropriated for the purchase of 40,000 acres to establish a training center for Field Artillery. The site was named Camp Knox in honor of General Henry Knox, Commander of Artillery during the Revolutionary War and later Secretary of War. Construction was begun but was halted with the Armistice.

In 1919 an additional appropriation was made for the purchase of more land, and until 1931 the area was used for training of National Guard, ROTC, CMTC and ORC elements of Fifth Corps.

In 1931 Camp Knox was visited by General Van Voorhis, original commander of the mechanized cavalry. He was accompanied by members of a War Department delegation, and Knox was selected as most suitable for the organization and training of a mechanized cavalry brigade.

In 1932 the post was designated as a permanent establishment and the name became Fort Knox. Many permanent buildings were constructed, including barracks, quarters, a post headquarters, hospital and a sewage disposal plant. More land was purchased, until today the post covers an area of 107,000 acres and is the largest in the ZI.

In 1935 the Treasury Department established the Gold Depository here, wherein reposes most of the world's gold. During World War II this beautiful building held also the Constitution, the Declaration of Independence, the British Magna Carta, the Gutenberg Bible, and the original of Lincoln's Gettysburg Address.

The Armored Force as such came into being in July of 1940, prodded by German victories in Poland. Fort Knox became the headquarters of the new arm, and to General Chaffee fell the staggering task of building a new military segment during peacetime. Fort Knox became the birthplace of armor, with its proximity to our great industrial centers aiding greatly in the program of expansion. Today there exists at Knox one of the leading centers of military science, tactics and techniques.

Major units on the post include The Armored School, the Third Armored Division, the UMT Experimental Unit, the 2128th Area Service Unit, the Food Service School, The Medical Department Field Research Laboratory and Army Field Forces Board No. 2, all under the command of the Armored Center. The 315th Army Air Force Base Unit is stationed at Godman Field, a part of the Reservation.

Today Fort Knox is the focal point of armor and is more than ever the embodiment of the name which is the outgrowth of early experimentation, and which World War II brought to fruition—The Home of American Armor!

A MESSAGE FROM THE COMMANDING GENERAL, THE ARMORED CENTER

I consider my assignment as Commanding General, The Armored Center, and Commandant, The Armored School, the greatest honor that it has been my privilege to receive. When I think of the commanders who have preceded me, and the standards they have established, I feel quite humble. I am resolved to maintain those standards and to exercise every effort to improve upon them.

During the past few years much has been said about "Push-button" Warfare; so much that many people today are entertaining serious doubts as to the place of the field forces in our scheme of national defense. Many are wondering, quite seriously, if the Army today offers a worthwhile career. Actually, never in our history has the Army offered more of a challenge to sound thinking and good judgment; never has there been a greater requirement for professional skill. In the foreseeable future ground field forces will be required for seizing and holding bases—naval and air—and for overcoming both airborne and ground enemy forces.

I do not need to emphasize the role the Armored Forces will play in any future conflict. As in the past, the armored divisions will be called upon to provide highly mobile, hard-hitting striking units which were so spectacularly successful in breakthrough and exploitation in the recent war. Armor will always be needed to deliver the quick, knockout blow. Although the armored division is fully mechanized, with more guns and machines of destruction than any other land force of equal size, personnel problems are of more importance than ever before. The machine is merely the instrument of destruction: the soldier furnishes the brain, the will and the courage. As the machines become more technical and intricate, the soldier must in turn be more highly specialized, possessing the basic knowledge of his equipment and of the multiple arms that go to make up the armored division.

Today men of vision are essential. Today more than ever before there is a great premium on leaders. We must have advanced thinking, experimentation, development and training. We must qualify ourselves so that we will be ready for new weapons when they become available.

As the new Commanding General of The Armored Center I will do everything in my power to the end that The Armored Center, in its present day revitalized training role, will continue to turn out highly skilled specialists capable of keeping American Armor abreast of the latest developments in military science.

Major General William G. Livesay, Commanding General, The Armored Center and Fort Knox, began his military career as a private when he enlisted in the Regular Army on May 3, 1915. He received a commission as first lieutenant of Infantry November 26, 1916, and landed with the first contingent in France in June, 1917, assigned to the 28th Infantry, 1st Division. During World War II General Livesay commanded the 91st Infantry Division in Italy. In early June, 1947, General Livesay was assigned as Chief of the United States Army Group of the American Mission to Greece in connection with the aid program for that country. He took over his present assignment at Fort Knox on June 15th.

THE ARMORED CENTER

THE ARMORED CENTER'S COMMANDING GENERAL THESE PAST TWO YEARS TELLS US THE STORY OF THIS FOCAL POINT OF ARMORED CAVALRY-FIELD FORCES ACTIVITY.

by Major General John W. Leonard

THE Armored Center at Fort Knox is very naturally known as The Home of Armor. From its development in the lean days before the war, on through its tremendous expansion into a triumphant wartime striking force and up to its existing future-minded establishment, American armor has been centered at Fort Knox.

The Armored Center comprises a group of installations described in other articles in this issue of The ARMORED CAVALRY JOURNAL. They are The Armored School, Army Field Forces Board No. 2, the Third Armored Division, and the Universal Military Training Experimental Unit. In addition, there are the post at Fort Knox, the 2128th Area Service Unit Station Complement, the Medical Department Field Research Laboratory, Godman Air Field, the Food Service School, and various other attached units. With a military population of over 25,000, it is the largest post in the United States.

Such a sizable and varied collection of units representing so many different aspects of the Army's activities attracts a host of visitors to Fort Knox. They range from the thousand or more distinguished military and civilian leaders from all over the world who were entertained officially last year to the innumerable motorists who see the sign on the Dixie Highway—FORT KNOX—THE HOME OF THE ARMORED SCHOOL—VISITORS WELCOME—and turn in to visit the Patton Museum and tour the post before continuing on their journeys.

The traditions of American Armor have been centered at Fort Knox since 1932 when the mechanized force at Fort Eustis, Virginia, was broken up and the First Cavalry Regiment was mechanized and moved from Marfa, Texas, to Fort Knox. Colonel (later General) Van Voorhis had selected Camp Knox in 1931 because he believed the fledgling force there would not be dominated by the chief of any branch. The force was small and the equipment meager, but men with vision were looking ahead.

Major General John W. Leonard graduated from the U. S. Military Academy in 1915. During the First World War he won the Distinguished Service Cross serving in France with the Sixth Infantry Regiment of the Fifth Division. As Executive Officer of Pershing's Composite Regiment after the war he took part in Victory Parades in Paris, London, New York and Washington.

General Leonard was Commanding General of the Ninth Armored Division during World War II; the division that fought so effectively on widely separated fronts during the Battle of the Bulge, and later seized the famous Ludendorff Bridge over the Rhine River at Remagen. He has just completed a two-year tour as Commanding General of The Armored Center, having left in mid-June to assume the post of Military Attache in London.

General Van Voorhis later wrote: "It might be interesting to note that in 1933 I was advised by the War Department that two German officers, one an Ordnance tank expert from Germany, the other a German staff officer attending our school at Leavenworth, would visit Knox to see what we were developing in the way of mechanization. These officers remained for three days and manifested a good deal of interest in our activity. They were not particularly interested in our equipment, which certainly was not very formidable at the time, but were interested in our conception of the proper equipment. They were keenly interested in our views on the proper tactical and strategical employment of mechanized forces. . . . As late as 1938 the Germans made frequent visits to Knox. I was very much interested when the Germans overran Poland to see how closely their operations coincided with our conception of the employment of Armored Forces."

Though funds for American mechanization were slim and official opinion often lukewarm, the Germans found in the United States isolated groups of men with sound ideas on the organization and employment of Armored Forces.

In 1938 Colonel Adna R. Chaffee returned from a tour of duty in Washington to assume command of the

newly activated 7th Cavalry Brigade (Mechanized). Until his retirement in broken health from overwork, he was the driving force behind armor. Through his efforts the Sixth Infantry was ordered to Fort Knox to join the Mechanized Cavalry Brigade in the Louisiana-Georgia Maneuvers of 1940. In these maneuvers the tank began to come into its own, and the German victories in Poland had made the tank question urgent. Thereafter, progress and expansion were rapid. On 10 July 1940 the Armored Force was born when the War Department issued the directive stating: "For purposes of service test, an Armored Force is created." The words "service test" were used because the National Defense Act of 1920 made no provision for a separate Armored Branch.

It came as no surprise when General Chaffee was designated the first Chief of the Armored Force. To him fell the task of building a new military arm while America was at peace and funds were limited.

Following the activation of the Armored Force in 1940, the Armored School, the Armored Force Replacement Training Center (now the Third Armored Division) and the Armored Force Board were set up in rapid succession.

After General Jacob L. Devers became Chief of the Armored Force in August of 1941, it developed and expanded beyond even the dreams of its first Chief. He built up a tremendous amount of personal support in industry and in the Army. This support proved of great value in an organization like the Armored Force, which depended for its strength upon a wide variety of arms and services, together with American industry, for the tools with which to forge the armored thunderbolt. The proximity of Fort Knox to such industrial centers as Detroit, aided by personal liaison with private manufacturers in the area, helped considerably in the program of expansion.

When Army Ground Forces was established in March of 1942 there was little doubt that the Armored Force was one of the most self-sufficient of the commands under control of the Ground Forces. It continued in that position and developed its character by virtue of the close contacts it had already established with all of the arms and services having component parts in the Armored Force. Until this time it had commanded all armored units within the continental limits of the United States. Now command passed to Army Ground Forces, though the Armored Force retained inspection functions to determine readiness for overseas shipment and planning responsibilities for all armored units.

After General Alvan C. Gillem, Jr., succeeded General Devers it was felt that the name "Force" in the title "Armored Force" caused some confusion due to the establishment of the Ground, Service and Air Forces, and that the "Armored Command" would be a more accurate designation on a plane with the Airborne Command, the Anti-Aircraft Command and the other commands under Army Ground Forces. It still retained inspection functions with respect to all armored units in training in the United States. And in February of 1944 it was again redesignated, this time to its present title, The Armored Center.

From activation on 10 July 1940, the Armored Force advanced substantially in experimental work, training and organization. It produced 11,852 second lieutenants at the Officer Candidate School; it organized and trained four corps headquarters; it organized and trained sixteen armored divisions, all of which engaged in combat, and it turned out some sixty-five tank battalions and a number of amphibious tractor battalions. All but a few of these saw combat.

Following a brief period of inactivity, The Armored Center was reactivated on the First of November in 1946. Efforts were immediately concentrated upon the task of consolidating the tremendous gains made during the war and of stepping to the vanguard to pace military science in an advancing world.

November of 1946 also saw the activation at Fort Knox of the Universal Military Training Experimental Unit, and the focusing of the nation's attention upon this important test in military training. Also in the same month the first shipments of General Patton's collection of artillery pieces, armored vehicles, self-propelled guns, small arms, ammunition specimens and uniforms were received from Europe, and became the nucleus of Patton Museum.

To keep alive the traditions of the Third Armored Division, and to eliminate some of the negative factors inherent in the replacement system idea by providing identity and organizational features for the benefit of personnel, the Armored Replacement Training Center became the Third Armored Division.

During the academic year just completed the curriculum of The Armored School has been broadened to include division-level general staff instruction, something previously covered only at the Command and General Staff College at Fort Leavenworth.

We are proud of the achievements being made by the component units of The Armored Center—in experimental research by Army Field Forces Board No. 2 and the Medical Department Field Research Laboratory—in academic training at The Armored School—and in training by the Third Armored Division. We are confident that American Armor faces the future strong, vital, and aggressive; ready for whatever the future may bring.

PATTON MUSEUM

FORT KNOX, Kentucky, the "Home of Armor," is also, very appropriately, the home of the Patton Museum. The Third U. S. Army, during its history-making drive through Europe, had collected large quantities of enemy weapons, vehicles and equipment. General Patton, aware of the value of such material for military study and research purposes, had directed that such a collection be made. Then, in June 1946, the War Department ordered that this enemy matériel be designated "The Patton Collection," be shipped from Europe to The Armored School and kept intact at Fort Knox. The Armored School housed this varied sample of enemy military might in an immense building, and published orders designating it as "The Patton Museum," a permanent memorial to the outstanding exponent of United States armored training and combat effectiveness in World War II.

The building, well located in The Armored School area, is divided into two main wings, several small rooms and two balconies. The north wing contains foreign artillery pieces and some fifty towed weapons of varied sizes. The south wing houses the vehicular equipment, tanks, self-propelled guns, personnel carriers, armored cars and larger items. Small arms, radio equipment, uniforms, flags and items of similar nature are displayed on the balconies and in the small rooms.

All of the Patton Collection was used by the German Army against the Allies. However, it is not all of German manufacture. Many of the weapons were used by the Russians, French, Czechs, and other Allied nations against the Germans, then captured and used by the Nazis against the Allies, a vicious cycle.

The largest gun on the museum floor is a German 170mm gun. It is 42 feet long, weighs 20 tons, and it fired a projectile weighing 138 pounds. The smallest is a Czech 37mm antitank gun that was captured by the Nazis, rebored to fit their ammunition, and placed back in use. Also in the collection are Russian 154mm and 57mm guns and Czech and Yugoslav 100mm guns that fell into German hands. Other pieces include Nazi 105mm, 75mm and 50mm weapons and one four-barrel 20mm antiaircraft gun as well as the notorious German 88mm multi-purpose weapons.

At present, the largest tank in the museum is a Mark V Panther, a 45-ton job that mounts a potent weapon, the long barrel 75mm gun. A Mark VI giant tiger tank is en route to Fort Knox and will be displayed at the museum in the near future. Other vehicles on display are the Mark III tank, a 150mm self-propelled gun on a Mark IV chassis, a 75mm dual purpose gun on a Mark III chassis, an eight-wheeled armored car, a 75mm antitank gun, a four-wheeled armored car, and a medium personnel carrier mounting a 75mm assault gun.

The original Patton Collection has been greatly augmented by donations of individuals who are interested in this establishment. Also, various departments of The Armored School have given items of foreign military equipment. In fact, the bulk of the Japanese matériel displayed came from one of these departments. Donations of this type continue to come in and are always welcome for display purposes. More than 1,000 pictures which trace the growth of the Armored force and Fort Knox cover the walls and balconies of the building. Also, many combat shots are included in the photo collection.

The museum is open seven days a week to both the general public and military personnel. It has tremendous popular appeal, with as many as 500 to 1200 visitors attending on some days. Two items, donated by Major General John W. Leonard, former Commanding General of the Armored Center, are high on the public interest list. They are the Remagen Bridge sign, taken when General Leonard's Ninth Armored Division established that famous bridgehead on the Rhine's east bank, and an exact replica of the table given to Adolf Hitler by Chief of the German Work Program, Doctor Todt, on the occasion of Hitler's fiftieth birthday. This table top of solid brass has engraved on it an outline of the vast autobahn, or super-highways that form a network of military roads covering Germany. A jeep that the late General Patton used in combat is on display and proves to be a very interesting item. Another vehicle that is expected at the Patton Museum is the trailer that General Patton used as a command post during combat in Europe.

The Patton Museum is being maintained and improved daily by Master Sergeants Charles L. Parker, Robert L. Irey and Luther E. Hoggard and Technical Sergeant Ernest E. Massey.

THE ARMORED SCHOOL

by Lieutenant Colonel M. M. Brown

The Secretary of The Armored School traces its development and reviews current activities in the Army's college for Armored Cavalry.

OFTEN described as the largest school of its kind in the world, The Armored School at Fort Knox, Kentucky is the great technical college of the Armored Cavalry and the school of the Armored Division. Geared to roll some 35,000 students off its human assembly line each year, the school in eight years has transformed the rolling wooded hills of northern Kentucky into an army installation of more than 500 buildings, miles of road, and many gunnery and tank driving ranges. It was constructed and equipped at an original cost of some $20,000,000.

Formation of the school followed closely the organization of the Armored Force in July 1940. The organization of the Armored Force brought with it the immediate problem of training the large number of technicians necessary to perform the specialized tasks of mechanized war. An analysis of the requirements of the infant Armored Force showed that 800 officers and 7,200 enlisted men should be trained over a twelve-month period.

The answer to this vast training problem was The Armored Force School, established by directive of Major General Adna R. Chaffee, Chief of the Armored Force, on August 7, 1940. Lieutenant Colonel (now Major General) Stephen G. Henry was selected as the officer to plan, organize, and operate the school which originally included a Replacement Training Center; however, before the first students arrived into the school's brand-new classrooms, the Replacement Training Center was redesignated as a separate installation. This was on October 1, 1940.

The original need in armored units was for tank mechanics, automotive mechanics, radio operators, radio repairmen, and clerk typists, with the additional need for specialized instruction at the level of company and battalion commanders. Hence the formation of the Armored Force School with its great emphasis on specialist training.

The physical plant of the Armored Force School was predicated on the type of instruction which was to be given, as well as the number of students to be trained in the various specialties of armored units. In order to have sufficient space for the physical layout of the academic buildings, and the barracks for students and assigned personnel, the northern section of Fort Knox was selected. The area originally allotted was approximately six-tenths of a mile long by a half mile wide. The first Headquarters and Planning Center for the newly activated school was in a concrete mess hall originally designed for summer camps of the civilian components.

Brigadier General Bruce C. Clarke is a graduate of the United States Military Academy, Class of 1925. He was commissioned in the Corps of Engineers. In 1941 he became Division Engineer of the 4th Armored Division. Subsequently he commanded Combat Command "A" of the 4th Armored and Combat Command "B" of the 7th Armored Division.

In 1945 General Clarke went to Army Ground Forces as Deputy Chief, and later Chief, of the Plans Division. He was assigned to The Armored Center and became Assistant Commandant of The Armored School in February of this year.

The construction program was one of vast proportions, there being 68 buildings for housing, supply, and administration of the anticipated student load, and about 40 buildings for housing the instructional staff and the overhead personnel necessary to man this large plant. With hundreds of civilian construction men on the job, buildings mushroomed with amazing speed and were occupied by the instructional staff as fast as the last painter or carpenter moved out.

One sidelight to the building program was the construction of a full-scale LST (Landing Ship Tank) building for the purpose of solving ventilation problems which cropped up when tank engines were warmed up prior to debarkation from the ship. This structure was completed in the early spring of 1942, and the first ventilation test completed on June 8, 1942. The building, some 600 miles from the Atlantic Ocean, is purported to be the first LST completed for use in World War II.

Simultaneously with the construction of buildings the problems of equipment and personnel were getting their share of attention. The resources of the tank school at Fort Benning and the Communication and

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Lieutenant Colonel M. M. Brown is a graduate of Virginia Military Institute, Class of 1931. During the late war he served as G-2 of the First Armored Division. He is now Secretary of the Armored School.

Pre-course student orientation on armored vehicle.

Motor Schools formerly operated by the 7th Cavalry Brigade (Mechanized), Fort Knox, Kentucky, were made available to the Armored Force School during the latter part of September. Major (now Colonel) Robert G. Howie came from Fort Benning to take over as Executive Officer and to help organize the school. A cadre of enlisted men arrived from Fort Benning on October 10, 1940. The First and Second Armored Divisions also provided a part of the original personnel. On November 4, 1940, the first students were enrolled in the new plant.

The original curriculum was broken down into eight departments. These were the Tank, Wheeled Vehicle, Communication, Tactics, Gunnery, Field Engineering, Motorcycle, and Clerical Departments. The courses were planned to operate on four cycles of three months each, in order to produce the desired annual quota. Very soon after the school opened, the expansion of the Armored Force to six divisions and fifteen GHQ tank battalions made these plans obsolete. The expansion of the physical plant of the Armored Force School was impracticable in the time allotted and also because of the expenditures such expansion would entail. A physical expansion would also leave the school with an enormous excess capacity when the emergency was over. Learning that the three-month cycle did not use the entire plant all of the time, an innovation was adopted from private industry.

Remembering the mass production methods of the automobile industries, which, for example, do not await the completion of one unit before starting another, a plan was formulated to use all of the equipment all of the time. The major courses were broken down into phases. By dividing the tank mechanics course into ten phases of six working days each and introducing each six days a new increment of soldiers, some 1440 soldier students could be trained at the same time.

This phasing had several additional advantages. A student who became ill and was hospitalized in the middle of the course or who was granted an emergency furlough because of a death in his immediate family, or who for any other pertinent reason was forced to miss a part of the course, did not need to wait for the start of another three-month cycle. Instead, he lost only a very few days, since a new phase began every week. Students who, by reason of a lack of previous education or mechanical training, failed to grasp certain essential material in the brief time available, could repeat a particular phase and thus have an opportunity to master the lessons they found difficult.

The instructors were able to become experts by teaching a particular phase over and over. If they showed a tendency to grow stale, they were switched to another phase, perhaps taking that part of the course for a week or two as students until they became almost as familiar with that phase as with the one they had been teaching.

On February 3, 1941 it was necessary to further augment the capacity of the school. The Armored Force was again being expanded and the number of specialists who had to be trained also increased. On this date, the two-shifts-per-day system was inaugurated. Again the Armored Force had discarded army educational traditions and borrowed successfully from private industry.

Under the two-shifts-per-day system, students on the first shift marched into classrooms at 0600, remaining until noon. At 1300 the men on the second shift took their places, and remained on the job until 1900. By means of the two-shift system and the staggered increments, the output of the school was tripled.

The next step in the expansion of the school was to meet the great increase in production adequate for the needs of the armored force after Pearl Harbor. This expansion in the capacity of the school was accomplished by shortening nearly all of the courses and by lengthening of the morning and afternoon shifts from six to seven hours. These changes were effected March 13, 1942. Most of the courses then were on a six-day basis with students on the first shift attending class from 0600 to 1300, and the afternoon shift from 1300 to 2000. The peak capacity of the Armored Force School was reached at this time, and amounted to nearly 10,000 students present in the school at one time.

During these early days of specialist training, the instruction, as far as possible, was broken down into small groups. An entire class would listen to a lecture, take part in the discussion, and watch the instructor in charge perform a demonstration. Then the class was divided into small groups, usually from four to eight men, under an assistant instructor, for the performance of practical work. This permitted a greater amount of personal attention to be given to the student, particularly to the slower groups.

In all departments, greatest possible use was made of visual aids. Huge charts, many times larger than the mechanical part they illustrate, are much more effective than words in explaining how guns and vehicles operate. In addition to charts and diagrams, visual aids take the form of wooden working models, cutaway

sections, and movie film strips. Among the more dramatic instructional aids at The Armored School during this period were an ingenious tank identification table; the Haskard Map representing a large section of the English countryside in the vicinity of Salisbury; a large scale terrain table of a training area at Fort Knox; and tables on which were constructed facsimiles of the Civil War battle grounds in the vicinity of Gettysburg.

In testing the achievement of students, practical examinations were employed wherever possible. In this manner a constant check was maintained on all students. The slower students were given more attention and the fast learners were pushed on. These practical tests were supplemented from time to time by written and oral quizzes.

The need for changes in the type of instruction and for frequent breaks was recognized particularly in those courses, such as code and clerical classes, involving close attention to detail. Since no student could be expected to type or to listen to code for seven successive hours without losing interest, or without becoming unduly fatigued, such classes were divided into two divisions. In the Clerical Department the student would type for fifty minutes, have a ten-minute break, and then go to a conference for fifty minutes on army administrative methods, and so on for the seven-hour shift. Thus, the typewriter was used fourteen hours each day, and actually served four different men—two on the morning shift and two in the afternoon. Code classes in the Communication Department were conducted in a similar manner. Tedium thus was minimized.

For those students able to become proficient in their specialty in a shorter period of time than that normally allotted for the course, graduation and return to their unit took place as soon as they had satisfied the requirements for completion of the course. Likewise, for the student unable to become proficient in the normal time allotted to the course, graduation was retarded and the student repeated with the next increment that phase or portion of the course in which he had not become proficient. By this method, the highly intelligent, able, and willing student was trained and returned to his unit without delay, while the slow learner was brought to a similar stage of proficiency over a longer time and academic failures were almost eliminated.

The School was divided originally into three main divisions—the Academic Group, the Training Group, and the Demonstration Regiment. The Training Group was the housekeeping division. It housed, fed, paid, administered and gave basic military training to students attending the school. Originally known as The Armored Force School Detachment, it was redesignated as the Training Group on December 4, 1941, and expanded until, in 1943, it consisted of four regiments; 1st, 2d, and 3d Student Regiments, the Instructor Regiment, and the Student Officer Group. The organization within the Training Group has varied from time to time depending upon the number of students in the school. The Training Group now consists of the 1st and 2d Student Companies, a Student Officer Company, and the Instructor Company. It has been redesignated the Student Battalion, The Armored School, under command of the Commandant of Students.

The Demonstration Regiment was a miniature armored division containing in skeleton form all the elements that went to make up a division of the armored force. Its purpose was to present tactical, maintenance, and logistical demonstrations, and furnish such troops and matériel as were needed for the practical training of students in the academic departments. The regiment was organized in January 1942. In May 1944 the Demonstration Regiment and Table of Organization Units assigned to the school were combined into School Troops, The Armored School, with the same mission as was assigned to the Demonstration Regiment, plus the additional mission of training Table of Organization and Equipment Units for overseas shipment.

By the middle of 1943 there were nine academic departments; the activities of which were many and varied. The courses given at that time ranged from four to fourteen weeks in length.

While the mission of the various courses was to train selected officers and enlisted men for the specialties of war, it has often been pointed out that the individuals who flow through the school acquire knowledge which benefits them the rest of their lives. Thousands of the technicians have been able to start on new careers, since the training they received at The Armored School has been beneficial in peacetime pursuits as well as in war.

During the fall and winter of 1942-43, a rugged battle training course was built by units of the Demonstration Regiment. The purpose of the course was to develop within the individual fighter a high degree of self-con-

Tactics Department—training on the Haskard Map.

fidence, courage, and aggressiveness in battle; to train him in the tactics of close combat so that even after his principal weapon, vehicle, and supplies were lost or destroyed in battle, he might still be capable of continuing as a potent threat to the enemy; to coordinate and exploit mental and physical condition concurrently. Three days of training was given to all students in the Officer Candidate School, and to the students of the Company Officers' Tactics Course.

The Battle Training Course included an obstacle course, infiltration course, battle firing, woods fighting, village street fighting, hand to hand combat, grenade, and booby traps. Instruction was carried on by eight officers and thirty enlisted men of the Battle Training Section of the Tactics Department.

In April 1943, the 73d WAAC Company from the 2d WAAC Training Center, Daytona Beach, Florida, was assigned to the school. One hundred thirty auxiliaries assumed clerical and administrative jobs in the school, releasing a similar number of soldiers for duty with troops. On June 1, 1943 the 73d WAAC Company was redesignated as the WAAC Detachment, The Armored Force School.

Late in February 1943 , General Henry, the original Commandant of the School, and Colonel Howie, original Executive of the School, were relieved of their assignments. General Henry was named Commanding General of the 20th Armored Division, and Colonel Howie became the Armored Force Liaison Officer at Aberdeen Proving Ground, Maryland. Colonel Joseph A. Holly of the Armored Force Board succeeded General Henry as Commandant, and was promoted to Brigadier General on March 18, 1943. Colonel Charles S. Johnson moved from the Tactics Department to become Assistant Commandant.

The original Cadre of 155 officers and men who started the school had expanded to 40 officers and 1,458 enlisted men by March 1941, at which time most departments were fully operative. In May 1943 the operating personnel consisted of 700 officers and 5,500 enlisted men. Of the school's more than 500 buildings, 67 were then in use for instructional purposes alone.

In the beginning, The Armored Force School was a small centralized unit. Its administration was relatively simple. The system was centralized around and directly under the control of the Commandant, and the Headquarters was composed of the Commandant, Executive, Secretary, and a Personnel Section.

The immediate problem to be worked out was the proper handling of the records, and accountability of the personnel to be trained, and the receiving and shipping of students. These problems remained troublesome even as late as the latter part of 1941.

During the first month of 1942, the school had reached an over-all strength of nearly 7,000 students and assigned personnel. By this time the administrative setup was based on an organization of a command head, namely, the Commandant and his Staff, the three student regiments, which housed and fed all students, and the Instructor Regiment to care for instructor personnel. These regiments were coordinated under a Training Group Headquarters.

The activation of the Demonstration Regiment and the Officer Candidate School made a total of six regiments under one command. All administration passed through the Commandant and Staff, and was handled by the following sub-sections: an Operations Section which coordinated all plans and training of the Academic Group; a Personnel Section, for both enlisted and officers; a Statistical Section, whose principal function was to operate as a locator center; an Academic Records Section which controlled the incoming and outgoing students and recorded their grades; and a Classification Section with the normal classification functions.

In November 1942 the School contained approximately 15,000 enlisted men, divided into 8,000 students and 7,000 cadre. At this point it became necessary to standardize all the administrative procedures of the School. The Commandant and Staff Section was organized along the lines of a General Staff, composed of two basic divisions under the Commandant. They were the Academic Group and the Administrative Group. Under the Assistant Commandant all matters academic were consolidated to operate by the direction and coordination of the Operations Section. The administration of the School was controlled by the S-1 and The Adjutant General under the direction of the Executive. All other administrative sections were divided under these two sections for control.

Using this system, policy was established by the Commandant upon recommendation of his staff, the unit commanders, and department directors, and then was carried out by responsible staff officers and agency heads. By using this system, a rigid control of command was maintained, but efficient functioning was secured through the complete decentralization of authority.

After the formation of the last armored division, the demand for specialists was somewhat lowered. The need was then only for replacements for battle casualties and attrition within armored organizations. This caused a decrease in the enrollment of the School and a slight change in the methods and content of instruction.

Students during this period came from two sources—from Table of Organization Units in the field, and from the Armored Replacement Training Center. Those students from units in the field were trained and returned to their same units, while those from the Armored Replacement Training Center were trained and shipped to overseas or continental stations as armored replacements.

In 1945, after V-E Day, the emphasis of all instruction in The Armored School was turned to point toward the Pacific and the War with Japan. This necessitated a change in the instruction in the various departments so that the student was familiarized with the Japanese tactics and with the maps available for use

in that theater of war. Great changes were made in the Battle Training Course to adapt this course to the Japanese tactics and technique, even to the extent of changing the appearance of the buildings to give them a psuedo-Japanese appearance.

Then came the Atomic Bomb and V-J Day, followed by deactivation of many armored divisions and armored battalions. The need for a tremendous number of specialists was over. At this point the emphasis in the School changed from highly specialized instruction, to the mission of giving the student, regardless of his course, a well-rounded education. To give him, in effect, that education he would miss as a result of practical experience. Courses were lengthened to obtain more practical work and officer courses were instituted as an interim postwar measure. In the fall of 1945 plans were made to place The Armored School at the level of the other Special Service Schools of the Army. The Army plan for education included the establishment of an Officers' Basic Course and an Officers' Advanced Course. The first Officers' Advanced Course entered the School in January 1946. In September 1946 the Officers' Advanced Class No. 1 entered The Armored School for a thirty-seven-week course.

The emphasis now was on the training of the vastly increased Officer Corps, with the mission of giving them a well-rounded educational background long before they had reached the age of retirement. Meanwhile, classes in specialist subjects were still continuing, but with smaller enrollment.

By September 1947, The Armored School had reached the status of a full-fledged Special Service School and its curriculum, particularly for the Advanced Course, was the equivalent of that offered by the Command and General Staff College in prewar days.

The current organization of the School consists of the Commandant and Staff Section which functions in the dual role as the Staff of The Armored Center, under the Commandant, Major General William G. Livesay; the Academic Group, which comprises all of the instructional departments, the Student Battalion, the Training Literature, Reproduction, and Printing Plant, and Extension Course Department, which operates under the Assistant Commandant, Brigadier General Bruce C. Clarke; and the School Troops, which is now composed of Training Reserve Units under the command of Lieutenant Colonel W. H. G. Fuller.

As a result of the world-wide reputation of The Armored School, other branches and friendly foreign nations make use of its facilities. Marine officers and enlisted men take courses regularly. Officers from practically every South and Central American Nation have studied here, as have Philippine, Chinese, British, Canadian, Australian, and French officers, and enlisted men from the British, Canadian, and Philippine Armies. Members of military missions to the United States from many of the world's powers make frequent inspection trips to witness the School in operation.

In order to benefit from civilian know-how, the School employs a large number of civilian specialists in its various departments. Many of these specialists are former officers and enlisted men with the knowledge and experience obtained in actual combat. Small groups of officer and enlisted instructors take special instruction from time to time at industrial plants which manufacture guns and vehicles used by the Armored Force.

The Armored School still functions in a manner similar to that of civilian industry. Raw materials flow through the plant, are worked on by skilled technicians, and emerge as finished products. In The Armored School, the raw material is the untrained man. He moves through the various divisions and departments where the instructors are the skilled technicians, and where they impart detailed information and teach operations which the student will perform later in his organization somewhere in the Army. The student progresses from phase to phase and emerges with the basic training necessary to work at his specialty in the same manner as finished products roll off an assembly line in industrial production.

To mention over-all strength figures is but a small part of the large picture of the administration of The Armored School. It can best be described by stating that as of June 30, 1948, just short of 100,000 enlisted and officer students have been received, trained, graduated, and successfully handled and returned to their parent organizations.

The Academic Departments of The Armored School.

A brief description of the academic departments of The Armored School appears to be in order. We will start with the academic departments which existed in the middle of the peak load, 1942-43, and trace them to their present status.

CLERICAL DEPARTMENT. Far larger than any civilian business college, this department trained in eight weeks the clerks and administrative specialists of the armored force. Required to type at least 30 words per minute upon starting the course, students were given a brief review in typing, taught to write military letters, fill out records and reports, and keep military files. Special night typing classes for beginners were started in 1942, and were open to the School's assigned personnel. In the beginning, one officer and nine enlisted men formed the teaching staff. At the peak load, the department consisted of four officers, one warrant officer, thirty-six enlisted men, and four WACs, with a student body of 400. The Clerical Department was absorbed into the General Instruction Department in 1945, and now teaches only administration.

COMMUNICATION DEPARTMENT. Ranking with the Signal Corps School at Fort Monmouth, New Jersey, the Communication Department trains communication officers, radio repairmen, and enlisted communication chiefs. During its peak load period, this department trained communication officers in twelve

weeks, radio operators in from nine to fourteen weeks, and radio repairmen in fourteen weeks. Personnel expanded from a beginning of fourteen officers and fifty-five enlisted men with 900 students in November 1940 to thirty officers and 257 enlisted men with 1800 students in 1943. The 1800 students consisted of 1500 Radio Operators, and 300 Radio Repairmen. Early in May 1943, the Communication Department graduated its 10,000th radio operator. Currently, the personnel of the Communication Department consists of eighteen officers, twenty-six enlisted men, and thirty-three civilians. The instruction here is not confined solely to communication specialists. The Officers' Basic, Officers' Advanced, and the Noncommissioned Officers' Classes each receive communication instruction to enable each student to be familiar with and to operate all of the radio sets found in the armored division.

WEAPONS DEPARTMENT. Weapons Department, originally called the Gunnery Department, started with five officers and twenty enlisted men. At the peak period, the Department numbered 73 officers, 2 warrant officers, and 317 enlisted men. During the peak period, some 300 students were always on hand. Officers were trained to be gunnery instructors in six weeks. In this Department, emphasis is on the actual firing of all Armored Cavalry weapons from the carbine through the 105mm Assault Gun. Early in 1943, the enlisted course was revised to concentrate on repair and maintenance in the field, and renamed The Armorer and Artillery Mechanics Course. Enlisted men were trained to be armorers and gun mechanics in four weeks. One course added in 1943 was a radio controlled airplane target course of three weeks' duration to teach repair and maintenance of the radio controlled airplane target used in antiaircraft artillery training. All students in the Officers' Basic, Officers' Advanced, Officers' Associate Courses, and the Noncommissioned Officers' Courses receive instruction in the Weapons Department to qualify them on all of the weapons used in Armored Cavalry.

AUTOMOTIVE DEPARTMENT. Largest Department of the School, this is the outgrowth and combination of the Wheeled Vehicle Department, the Motorcycle Department, and the Tank Department. The Motorcycle Department operated the largest motorcycle mechanics course in the United States until the advent of the ¼-ton truck in July 1943. At this time, the Motorcycle Department was absorbed into the Wheeled Vehicle Department. The Wheeled Vehicle Department was established to train motor officers and automotive mechanics. The courses included automotive maintenance officers' courses for officers of company grade, to train them to be maintenance officers of companies, battalions, and regiments, and enlisted mechanics' courses to train automotive mechanics to adjust, service, repair, diagnose troubles on, inspect, and maintain wheeled motor vehicles, including half-tracks. This Department in 1943 had as many as 1,560 students present at one time, with an overhead of 45 officers, 2 warrant officers and 275 enlisted men. In 1945 the Wheeled Vehicle Department was merged with the Tank Department to become the Automotive Department, The Armored School. The Tank Department had equipment alone valued at $7,000,000 with an overhead of 386 personnel teaching 1,440 students in three different courses. The courses taught were Tank Maintenance Officers, Light and Medium Tank Mechanics. In 1945, upon the absorption of the Wheeled Vehicle Department, the course for automotive mechanics was lengthened to twenty-one weeks in order to train the mechanics as both tank mechanics and wheeled vehicle mechanics. All of the basic and theoretical subjects common to the two types of mechanical training were contained in one phase. During the same period, the motorized track vehicles of the field artillery were added to the curriculum of The Armored School and mechanics from the Field Artillery sent to Fort Knox for their instruction.

THE COMMAND AND STAFF DEPARTMENT. The Command and Staff Department consists of what formerly were Tactics Department and the General Instruction Department. General Instruction Department was established at the beginning of the school year 1945 in order to consolidate all subjects which did not naturally fall under the heading of tactics, weapons, automotive, or communication. Generally speaking, this Department taught all of the branch immaterial subjects of all courses. One of the School's original Departments, Field Engineering, was absorbed into Tactics Department in June 1941, and transferred to the General Instruction Department in September 1945, and has been returned to the Command and Staff Department as a Division within the Department, effective June 1948. The Command and Staff Department carries the brunt of the work load for officer and noncommissioned officer classes with the mission of instructing qualifying officers as general staff officers, to include the division general staff, and to qualify officers as commanders, to include the Combat Command Commander. The Command and Staff Department functions with five divisions, namely, G-1, G-2, G-3, G-4, and the Field Engineering Divisions.

INSTRUCTOR TRAINING DEPARTMENT. February 6, 1942, the Instructor Training Department was established under the name of Teacher Trainer Department. It was responsible for instructing the school commissioned, enlisted, and civilian personnel in the methods and techniques of teaching. The original operating personnel consisted of one officer, ten enlisted men, three WACs, and eight civilian teacher trainers who had been drawn from civilian educational fields. This Department in 1945 was consolidated and placed under control of the General Instruction Department. At this time, it is functioning as a separate division directly under the office of the Assistant Commandant, and in addition to training the instructor personnel of The Armored School, this division trains the officers and the members of the Noncommissioned

Officers Class in the proper methods and techniques of teaching. A remedial reading section is in the process of being established which will function directly under the old Instructor Training Section; now called Research and Evaluation Section.

THE OFFICER CANDIDATE SCHOOL. The Officer Candidate School instructed outstanding enlisted men who had passed strict physical and mental tests. Over a seventeen weeks' period, they were trained for commissions as second lieutenants in Armored Cavalry. While attending Officer Candidate School, the candidates studied under the various academic departments of The Armored School. Established on May 12, 1941, the Officer Candidate School enrolled 250 men in its first class on July 1. Since then the classes have increased or decreased to keep pace with the need for new officers as the Armored Force expanded. During 1942, approximately 450 new second lieutenants were graduated every three weeks. Late in December of that year, production was stepped up so that a class was graduated every week. Later on, when the need for new officers had slackened, weekly graduations were continued, but the classes graduating were reduced in size. Approximately one third of each class was weeded out during the seventeen weeks' training so that only those able to meet the most rigid leadership requirements were commissioned. The last class graduated in Officer Candidate School in October 1946, and brought the total Officer Candidate School graduates to 12,220.

TRAINING LITERATURES AND REPRODUCTION DEPARTMENT. This Department contains the Reproduction Department, founded October 16, 1940, which consists of a complete field printing plant, capable of producing a wide variety of duplicating processes. The Reproduction Plant is staffed by artists, draftsmen, photographers, and printers. The equipment is capable of mimeograph, multilith, linotype, letter-press and off-set printing, blueprinting, silkscreen work, air brush, photostat, and other duplicating processes. This Department turns out a wide variety of visual aids in the form of charts, maps, schematic drawings, layouts, posters, and, in addition, prints special school texts and field manuals for the Department of the Army. Training Literature Department edits and prepares for printing field manuals, film strips, training film scenarios, instructional bulletins, tactical training aids, lesson plans, examinations, and all of the training literature demanded in a modern school such as The Armored School. Under the direct control of the Training Literature and Reproduction Department, we also find the Book Department, which consists of a Book Shop with the main store in the academic area and one branch in the main post area. The Book Department operates under a Book Department Officer who, in addition to running the Book Shop, supervises the School Library. The School Library maintains a collection of reference books, technical publications, and some few fictional works on hand, but is in the main, a military library for the use of the students and instructors of The Armored School.

THE EXTENSION COURSE DEPARTMENT. This Department is charged with the administration of the nonresident instruction for all armored officers of the civilian components and regular army officers who enroll in armored extension courses. Student enrollments are accepted here; the lessons are mailed to the various students, who return examinations to this Department for scoring and posting. All of the records pertaining to armored extension courses are maintained in this Department.

These various departments are controlled and coordinated by the office of the Assistant Commandant, under the command of Brigadier General Bruce C. Clarke, who in turn is directly responsible to the Commandant for all instruction within The Armored School. The Assistant Commandant has as his staff a Director of Instruction, who is charged with the coordination of the academic instruction with existing directives and doctrine; an Operations Section which schedules all classrooms, student transportation, requirements for training areas, lunches, ammunition, and demonstrations pertaining to academic instruction; and an Academic Records Section which maintains the academic standing and results of examinations for all students in The Armored School.

Having come into existence in World War II, The Armored School is new and modern in every respect. The instructors are young and enthusiastic. The guiding commanders are of broad experience in all military phases. All of the examples and problems are modern. Tradition is still in the making, and The Armored School is taking its place on an equal rank with our Armed Forces Special Service Schools.

The Armored School has commenced publication of a Newsletter for the purpose of keeping armored cavalry officers and commanders and instructors informed of armored trends and abreast of the latest doctrine and techniques. The Letter will carry a Restricted classification and will appear biannually—in January and July. Within the limits of the classification the content will embrace current status of development, published changes in doctrine, revision of field manuals and correspondence courses, and brief resumes of current armored activities. This Newsletter is a valuable paper for active and inactive officers. We direct your attention to it.

THE ARMORED CAVALRY LEADERSHIP TESTS

TWENTY years ago a distinguished citizen with a sincere interest in the welfare of his country's military placed in trust a $35,000 fund, with the specification that the yearly income from the fund (which amounts to approximately $1,000) should be expended in the promotion and development of leadership in small cavalry units.

Under the direction of the Chief of Cavalry, suitable tests were formulated. Supervised by a three-member council normally including the Chief of Cavalry and the Commandant of the Cavalry School, a series of annual competitions was begun in which prizes and a trophy were awarded to the cavalry platoon obtaining the highest rating. These tests were conducted regularly from 1928 to 1941.

The war brought a suspension of the tests and a consequent accumulation of funds. This sum was turned over in June of 1946 to the Commanding General of the Army Ground Forces. It was supplemented by a portion of the fund held by the U. S. Cavalry Association. Within the same month a council was appointed composed of Major General Clarence R. Huebner, Major General John W. Leonard and Major General I. D. White. In September of 1946 this council met to discusse the continuance of the tests, and forwarded recommendations which were implemented in General Devers' letter to the Commanding Generals of all Armies in October of 1946.

On the last day of October in 1946, and at the request of the donor that his name not be used in connection with publicity, the name of the original Trophy Test was changed to The Armored Cavalry Leadership Tests. A new council was appointed for the year 1947, including Generals Leonard, White and Devine, and the tests were resumed among the Armored Cavalry units. The following units were awarded prizes:

First Platoon, Troop F, 43rd Cavalry Reconnaissance Squadron, 3rd Cavalry Group.

First Platoon, Company A, 66th Tank Battalion, Second Armored Division.

Reconnaissance Platoon, 41st Armored Infantry Battalion, Second Armored Division.

Recommendations for the year 1948 have recently been presented to and approved by General Devers. They include the availability to the Commander-in-Chief, European Command, of $1,500 to be used for the promotion of combat leadership in the Constabulary. Within the ZI the Commanding General of The Armored Center will select students with outstanding qualities of leadership on the basis of one each from a Noncommissioned Officers' Course, a Basic Officers' Course and an Advanced Officers' Course, with the respective prizes not to exceed $50.00 in value.

The lack of provision for the award of prizes to ZI units is based on the fact that the 1947 awards were granted there, and there is a certain difficulty and impracticability in testing ZI units. There was also the desire to obtain an equitable distribution by the inclusion of overseas units. The awards to the outstanding NCO's and officers at the Armored School have been scheduled as one of the best means of carrying out the primary intention of the indenture of trust—to promote combat leadership.

It is expected that an order will soon be published designating a new council whose members probably will be Major General W. L. Weible of Army Field Forces Headquarters, Major General William G. Livesay of The Armored Center and Major General John T. Lewis of The Ground General Center.

As we go to press we have news of the following 1948 awards, covering the three Armored Center Courses:

First Sergeant Simon M. Purvis, 57th Cav Rcn Tr (M)

First Lieutenant Albert L. Ramsey, Jr.

Lieutenant Colonel Frederic W. Boye, Jr.

The New Look In Training

by Brigadier General Josef R. Sheetz

The spotlight has been on our Universal Military Training experiment at Fort Knox. Civilian and military interest has been high. Here is the story by the UMT Experimental Unit's Commanding General.

AS the name implies, the Universal Military Training Experimental Unit at Fort Knox is an organization engaged in devising the best possible kind of training for teen-age youths in a peacetime military training program.

In late June, President Truman signed the first peacetime draft legislation which this country has had. Within a matter of weeks the draft machinery will go into operation. A substantial number of eighteen-year-old youths will fit the one-year training phase, while several hundred thousand men in the 19- to 25-year-age bracket will be available within the first year for the 21-month program. The important experience acquired in the Experimental Unit will pay off as the new draft program gets under way. Whether or not Congress had passed military training legislation, we have in the Experimental Unit an Army procedure for the training of young Americans that is successful, and which we must not fail to use.

Brigadier General Josef R. Sheetz began his military career as an enlisted man in the Maryland National Guard. During World War I he served in France with the 3d Field Artillery. He was commissioned in 1917, and is a graduate of Field Artillery School Courses, the Command and General Staff School and the Army War College. He has also served as instructor in the FAS and C&GSS, and at Princeton College.

During World War II General Sheetz served as American member of the British General Staff, and commanded the 24th Corps Artillery during the Marianas, Leyte and Okinawa actions. He served as Deputy Military Governor of Korea and as G-2 and G-3 of Fourth Army prior to assuming command of the UMT Experimental Unit.

The idea that we repeatedly try to get across to military and civilian visitors alike is that we are conducting an experiment in human relations—an experiment in which we have been learning how to handle young men so as to make them outstanding soldiers and outstanding citizens. It is working!

We are setting the pace in developing a "new look" in the Army. We have been pretty successful. So successful, in fact, that the entire Army is applying our methods insofar as they can to the Army as a whole. A recent report published by Major General Ray T. Maddocks, former Commanding General of the 3d Armored Division (Training) and now a member of the General Staff, Department of the Army, said:

"Much has been spoken and written about the methods, procedures, and policies of the Universal Military Training Experimental Unit at Fort Knox, Kentucky. Critics scoff at the marvelous results obtained by this unit, maintaining that they are dependent on carefully selected administrative and trainer cadre and trainees, on a ratio of cadre to trainees of one to one, and on funds and facilities not normally available to a Regular Army unit. The fact is, however, the 3d Armored Division (Training) has been utilizing generally the same methods, procedures, and policies and accomplishing roughly the same results as the Universal Military Training Experimental Unit. This has been done with normal administrative and trainer cadre and trainees, a normal ratio of cadre to trainees of approximately one to three point three, and the usual funds and facilities available to a Regular Army unit in a World War II cantonment area."

Thus, the accomplishments we have made in the Experimental Unit are proving themselves practical for adaptation throughout the Army. The things we have been doing for the past 18 months may very likely be a pattern which you and your sons will be following in the not-too-distant future.

Well, you ask, just what have you been doing in the Fort Knox Experiment? Here is the story.

Mission

The idea of an Experimental Unit for UMT was born in the fall of 1946 when preparations were being made to present to the 80th Congress the Department of the Army's plan for Universal Military Training. The purpose of the unit is twofold:

First, it has been designed to test the Department of the Army program for training the youth of the Nation·

to find and correct any deficiencies in applying our present methods to teen-agers; and to perfect the whole plan for use in any peacetime military training program made law by Congress.

The second purpose has been to present a picture of what UMT will mean; to materialize a small section of the program so that interested people can see it in action. This unit has been, in effect, a training aid in the task of demonstrating to the mass of the American people that UMT, as contemplated by the Department of the Army, would be beneficial to the average American boy. Here critics have been able to come and prove or disprove their criticisms. With a section of UMT materialized on the ground, nebulous generalities give way to specific comments. We have been able to get the discussion on the value of teen-age training out of the realm of hypothesis and bring it into the world of practical reality.

Military Training

So far as the military part of the training is concerned, the Experimental Unit is trying few innovations. The methods developed during the past war years have proved their adequacy and depend only upon skilled and conscientious instructors for success. The first eleven weeks are devoted to basic training. The object of this training, as in all basic training, is to make good basic soldiers, men who are disciplined and loyal, men with pride in themselves and in their unit, men with a sense of responsibility to themselves and to their comrades, men who are alert mentally and physically, and men who know how to take care of themselves under all circumstances.

The next eleven weeks are devoted to branch training with the object of making good privates in the particular branch for which the individual is being trained. The UMT Experimental Unit has one Company of Armored Cavalry. In the Armored Cavalry, for example, the trainee will be capable of performing well all the duties of a basic Armored Cavalry Soldier.

Development of initiative—a "lance" corporal inspects.

The Armored Cavalry branch training includes: Driving and Maintenance, Crew Drill, Field Expedients, Tank Gunnery, .45 caliber SMG, .30 caliber LMG, 50 caliber MG, 81mm Mortar, Communications, Organization of Armored Cavalry Units, Air Transportability, Defense against Biological Warfare, Defense against Atomic Attack, and Tactical Training in Tank Section, Tank Platoon, Tank Company, Reconnaissance Section, and Reconnaissance Platoon.

We have eliminated one type of training from our program, a type that came into use for the first time in the last war and has never been part of our peacetime training. I refer to those drills and exercises that are designed to instill hatred of the enemy and a desire to kill in the heart of the trainee.

Such drills were of doubtful value even in wartime and certainly have no place in teen-age training. Reports of such drills in the press are the source of many of the objections to UMT and other peacetime training programs. Parents feel that such drills teach the boys to murder, and they oppose exposing their sons to such doctrines.

With this single exception our training schedule is standard. It was prepared by branch experts in AFF Headquarters. We sent staff representatives to all Army Schools to be sure that our methods were up to date, our training aids the best obtainable, our schedules in keeping with school policy, and our equipment the best so far developed.

Let me remind you at this point that this is not the old-line Regular Army; this is UMT, or a similar peacetime program for the nation's youth. The object of this training is not to prepare for immediate battle; it is to develop the potential strength of the nation so that there will not be another war. It is to turn out well-trained and well-disciplined basic soldiers to fill the ranks of the National Guard and the Organized Reserves; to send young men to ROTC who are already well-grounded in the basic military virtues; to teach obedience, a sense of responsibility, and loyalty to the young men of the nation so that any future emergency will find a trained and disciplined citizenry ready to meet it.

We have had two advantages at our Unit which no military commander has ever had before: Our trainees are all the same age, all 17 or 18 years old; and they are all here for six months of uninterrupted military training. These two advantages are of tremendous importance, and our program is designed to make the most of them. We can make a plan for six months and know that we can carry it out. With all our trainees of the same age group we can adapt our tried and true training methods to the needs of that age group.

During the terrific stress of expansion in the war years some bad practices crept into military training. The necessity for speed, the lack of instructors, the huge numbers involved, all made proper training very difficult indeed. When some men who had never learned discipline themselves undertook to teach discipline to others, the results were not all that might have been

desired. Since the opportunity offered, we made the attempt to eliminate the bad practices, to get away from the idea of the tough sergeant and the dumb recruit, and to substitute for it a better attitude, a sounder relationship.

Remember, we are dealing with boys. We must treat them like men because they expect to be so treated, but we must never forget that they are boys, and will react like boys—most annoyingly at times. If this idea is in the back of our minds, we will automatically be more patient and more tolerant, more inclined to put correction ahead of punishment, and advice ahead of bawling out.

The young men in our Unit are a typical group of young Americans. As nearly as practicable they represent what we can expect to get under UMT or any other type of teen-age training. The average age at the beginning of training has been about 17½ years. None have any previous military service except a week or two at induction stations. Nearly all states in the Union are represented. During two cycles the average education was slightly above the national average and the AGCT score was considerably above the Army average. In the third cycle the educational level was below the national average. We have been gratified to find that the trainees in the third cycle have been even more appreciative of their opportunities to learn in the Unit, and even more eager to become good soldiers.

With these groups we set out to demonstrate to the skeptical that the Army knows how to train young men.

Leadership

In the military lexicon the most important words are leadership and discipline. Between them they comprise a large percentage of the military virtues. If we are to handle the youth of the nation successfully, we must understand the meaning of those two words. There is nothing new in what I say on this subject. Every idea here has been said before many times, but it needs to be expressed again—not for everyone, it is true, but for those who have never learned or have forgotten what true leadership and true discipline mean.

These two words are almost inseparable; they interlock and overlap, and it is almost impossible to speak of one without the other. Good leadership produces good discipline, and one is never found without the other.

When I speak of leadership I am not thinking in terms of Alexander the Great and Napoleon, or Eisenhower and MacArthur. I am thinking of leadership at the lower level, the company commander, the platoon commander, and above all, the platoon sergeant. The platoon sergeant is the man most intimately associated with trainees; he is the man who exerts the greatest influence on them and he is the man consequently, whose attitude must be correct from the beginning.

I am fully aware that leadership comes from the top, but I am also aware that the top must exert sufficient pressure to see that the principles of good leadership go all the way to the bottom.

Instructor-student relationship has replaced the old tough sergeant-dumb recruit idea.

Leadership is a question of human relations, and the only sound approach is the psychological approach. Leadership is based on an understanding of human nature, on the ability to see and to appreciate the other fellow's point of view. Only so can we inspire in subordinates the desire to carry out commands. The achievement of such leadership was the first object considered when this unit was in the throes of organization As a basis for establishing the proper attitude, these fundamental principles—which are really lessons in elementary psychology—were hammered home to the instructors in this manner:

First: this is peacetime training, and you are dealing with 18-year-old American youth. If you are to be successful you must have faith in what you are doing. You must believe that the average 18-year-old American boy is essentially good; that he wants to do well; that he wants to be well thought of by his associates and by his superiors; that he is at least a little bit ambitious and wants to get ahead and if he gets the proper guidance and the proper leadership he will do his best to be a success in the unit. This statement is the basis of everything we do. It *must* be accepted by the instructor, and *must* determine his attitude and his manner of handling trainees.

Second: If a recruit does something wrong, tell him how to do it right instead of cussing him out for doing it wrong. That statement appears too simple to need saying, but nevertheless it means a complete reversal in attitude for some people. If the platoon sergeant remembers that he is dealing with boys and if he believes these boys are sound at heart, he will have little trouble in adapting himself to this principle.

The idea of making corrections must be applied not only to military training but also to every phase of behavior and human relations. The cadreman, without hesitation, must tell a trainee anything that he should know but doesn't. Tell him to wash his hands and face in the morning; tell him not to comb his hair in the

snack bar or clean his fingernails at the table; teach him some elementary table manners; tell him how to behave on the bus, in the theater, or in town, and so on. Much of the bad behavior of teen-age boys in public is a result of carelessness and we must make it our business to go as far as we can to eliminate carelessness. The cadreman must correct every fault when he sees it—but he does not have to be nasty when doing it.

It must be impressed upon the Sergeant that he is an instructor, and the proper relationship between him and the recruit is the instructor-student relationship. The mere substitution of words puts the Sergeant on a higher level, gives him more dignity, and increases his own self-respect. But the Sergeant must never be easy with his men. He must be as strict as he is capable of being; but he must never be personal in applying corrections. He must be impersonal and objective.

In the instructor-student relationship there is no place for swearing or any kind of bad language. Instructors do not swear at students, although for some strange reason Sergeants are supposed to swear at recruits. The total elimination of swearing is probably impossible, but the prohibition against it in the instructor-student relationship must be enforced. One of our main objects is to develop in the trainee a sense of self-respect and personal pride. Swearing or unduly harsh language by the instructor makes the accomplishment of this object impossible; in fact, it diminishes the very characteristics we are trying to build up. Furthermore, swearing diminishes the prestige of the instructor, it lowers him in the minds of the trainees, and it does not lend emphasis to the instruction being given.

We use many more of these simple lessons in human relations, all designed to achieve a better attitude on the part of both instructors and trainees, all designed to improve the standard of leadership and to adapt training methods to the needs of teen-age boys. You must remember that the trainees are just average boys; some of them have had few opportunities. Sometimes they are recalcitrant and rebellious, but for the most part they will respond to proper handling. Some of them, of course, are bad and must be treated accordingly. One of the hardest lessons to teach the instructors is not to let the bad actions of the few embitter them against the rest or diminish their belief that the average American lad is sound at heart.

Discipline

Discipline is an unpleasant word to the average civilian because it suggests punishment, the iron hand of regimentation. Such an idea, of course, is wrong. Discipline means obedience—willing, cooperative obedience—to lawful authority. We set out to prove we could produce well-trained and well-disciplined soldiers without suppressing their individuality, diminishing their self-respect, or hindering their personality development. We said we would teach them discipline, build their characters, give them confidence, increase their self-respect, and make them better citizens while also making them good soldiers. The proof is here at Fort Knox.

We will unhesitatingly compare our disciplinary record with that of any other unit. We will go further and claim that the language in our barracks, the manners in our mess halls, our venereal rate, will compare favorably with that of any college freshman class. Behavior is the real test of discipline.

We teach discipline the way it has always been taught: by precision drills; by insistence on exact carrying out of all orders; by rigid adherence to all published regulations; by demanding punctuality, smartness, neatness; by parades and ceremonies; by correcting every deficiency at the time it occurs. Our instructors are just as strict and just as severe as they are capable of being; there is nothing soft about the training nor should there be. We must have discipline, good discipline, and there is no better way to obtain it. However, and this is of fundamental importance, discipline does not involve tyranny or regimentation.

Demerit System

It was to aid in achieving this type of discipline that we included a demerit system in the Unit. The object was simply to eliminate the apparent necessity for vocal punishment for minor delinquencies. The chief advantage of the Demerit System is that it provides the platoon sergeant with a simple, effective, and dignified means of punishment for small transgressions, and automatically keeps the relations between the sergeant and the recruit on a higher level.

Trainee Court

The demerit system, of course, applies only to minor delinquencies. For those other offenses which involve something more than mere carelessness or forgetfulness, we have what we call a Trainee Court. Before this Court are tried offenses which in any way reflect discredit upon the company. I am not speaking of crimes, but rather of such offenses as shirking, AWOL for a few hours, any neglect of duty, disorderliness or offensive behavior; in general, the kind of actions that decent people resent. These offenses are tried by a court made up of seven trainees.

The Company Commander sits on the court without vote. His primary purpose is to preserve order and rule on questions of law and procedure. In order to insure fairness and an impartial jury, trainees of the court are chosen from a company other than that of the accused. The accused's company commander is the officer without vote on the court. The Trial Judge Advocate as well as the Defense Counsel are both trainees.

The purpose of the Trainee Court is to make the offender feel that he has offended not the company commander, but the community itself, and to make him feel responsible to the community for his behavior. At the same time the company must be made to feel responsible for the actions of its members. The Trainee Court is really an experiment in self-government with the object of developing in the individual trainee a sense of re-

sponsibility. If you remember President Truman's press release when he appointed the Advisory Commission on UMT, it was a "sense of responsibility" that he particularly emphasized as a quality much to be desired in the younger generation. We have taken positive steps to develop such a quality in our trainees.

Information and Education

So far I have discussed military training almost exclusively, pointing out the minor modifications we have made in standard practice to meet the needs of the young soldiers with whom we are working. There are other things to make a good soldier, however, besides strictly military training, and we realized the off-duty hours of these boys were just as much our concern as the on-duty hours. How to put these hours to good use is a much more difficult problem than planning a military training schedule. Young men need positive values in recreation, occupation, and personal interests. If no one bothers to provide these things, misbehavior will result. In order to encourage interest in education we do a number of things. At the beginning of each cycle we make an educational survey of all the trainees to determine their accomplishments and to discover their interests. We have made our school building the most attractive building in the area. We hold conferences on the opportunities available. The courses we offer are the usual USAFI courses and what vocational courses we can find teachers and facilities for. It is our aim to provide educational opportunities to any trainee with the mental and physical ambition to take advantage of them. We do our best to make educational facilities attractive and to stimulate the dullard to participate. At first our educational program was voluntary. As was to be expected, we encountered the difficulties that all night schools encounter. It takes an ambitious man to put in a couple of hours of voluntary education after eight full hours of compulsory military education. Then, too, of course, we always had the inevitable guard and KP to interfere with regular attendance. So we soon changed to a compulsory program of four hours per week.

All trainees take two subjects of two hours' duration each, on Saturday morning, electives within limits. The intellectually ambitious take two academic subjects; the others take vocational courses. Academic courses are limited only by the USAFI catalog; vocational courses by instructors and facilities available. We have regular classes in the more popular subjects: English, History, Psychology, Bookkeeping, Typewriting, Shorthand, Auto Mechanics, Radio, Physical Education, Vocal and Instrumental Music. Other students are formed into study groups. All, however, have expert help at hand. We teach, too, most of the common manual arts in our hobby shop. Our instructors are largely civilians, augmented by what talent we can find in our own headquarters.

The new approach is beyond question superior to the purely voluntary program followed in the first training cycle. Of course, there are some boys interested in nothing. Our constant aim, however, has been to give to every trainee some active interest in a vocational or academic field. We have tried to get away from passive recreation and substitute active participation. Maybe, if the lad who doesn't want to study can be made to develop a manual skill, he will go to the hobby shop occasionally instead of the movies.

Our educational counseling has always been a bright spot in our I & E program. By surveying the trainees, by almost innumerable individual conferences, we have accomplished a great deal. I can honestly say that the time devoted increased rather than diminished the interest of trainees in education. We do our best to fan the flame of educational ambition everywhere we find it, but lighting the spark in the first place is sometimes difficult. Many of our men have responded to the extent that they have worked hard for and have been awarded High School Diplomas while in our Unit.

Place of the Chaplain

There is a third part to our program which is something of an innovation in military training. When Dr. Karl T. Compton was appointed chairman of the President's Advisory Commission on UMT he made a statement to the press to the effect that the security of the country depends not only upon military preparedness, but also upon the physical, mental, spiritual, and moral fibre of the youth of the nation.

We heartily subscribe to that statement of principle. It underlies our whole program. From the beginning we were determined to do our best to turn out well-rounded young men, to include moral training in our schedule, and by some means to put increased emphasis upon spiritual guidance. Determining the precise steps to accomplish these ends was not simple, but we believe we have the solution.

The chaplain interviews each trainee shortly after his arrival, talks to him, breaks down the barrier that so often exists between the Chaplain and the soldier. During the course of the interview the chaplain makes out a card which is, in effect, a religious profile of the trainee, which is kept as a permanent record. These interviews have been a revelation. They supported our original assumption, that the average 18-year-old is not a cynic on matters of religion. As a result of those interviews 420 Protestants and 112 Catholics have voluntarily spent considerable part of their off-duty time receiving religious instruction from the chaplains. Some fell by the wayside, of course, for a variety of reasons. But our Catholic Chaplain has had 49 boys confirmed although 22 of those had to be baptized and 41 had to make their first communion before becoming eligible for confirmation. Our Protestant Chaplain, with the assistance of other chaplains on the Post and Louisville ministers, has helped 152 trainees complete the ecclesiastical requirements for joining the church of their choice.

Our chaplains are regular members of our faculty.

They conduct classes in citizenship each week. At these talks emphasis is placed on the duties and obligations of the citizen rather than upon his rights and privileges. Such duties and obligations are basically moral and fall within the realm of the chaplain.

Our social hygiene program, too, is in the hands of the chaplains. Here we consider personal morality as the only sound basis for combating venereal disease and, therefore, the emphasis throughout training is on continence and high moral standards. We do not stress penicillin, we stress morality as the answer in combating venereal disease.

Behavior

Throughout our training program we have endeavored in many ways to raise the general tone or cultural level of the unit. For this reason there is no beer in our Post Exchange. The Post Exchange is a club, a drugstore, rather than a beer tavern. We continuously strive to eliminate the vile and offensive language too often heard in barracks. We serve family style in our mess halls, allowing no one to begin a meal until all are ready, and insisting upon the observance of at least the fundamentals of good table manners. For this reason, also, we exercise close control over our social functions to insure that the customs of normal social behavior are understood by all.

In conjunction with our athletic program we endeavor to indoctrinate our men with the standards of good sportsmanship; not an easy task these days. In connection with passes we give instruction on proper behavior in busses, in town, in private homes and in public.

In all these things we are carrying out the basic attitude I described in the first place: namely, that the average American lad will do the right thing if he knows what it is and if the standards of his group are maintained at a high level. Much bad behavior springs from ignorance and the hostile defensive reaction which results from harsh or unsympathetic correction. It is easier to prevent bad behavior than to correct it.

One of the chief reasons for restricting the trainees to the battalion area for the first month is to give the instructors the opportunity to teach the fundamentals of common courtesy as well as military courtesy before the trainees come in contact with outsiders.

At the end of the first month, they are permited week-end passes on the same conditions as other soldiers. While we discourage overnight visits to near-by towns by having our own principal social activities on Saturday and Sunday, we do not try to prevent them. Every bartender and package store clerk in Louisville knows that wearers of the UMT patch are minors and may not be sold intoxicants of any kind, not even beer, under penalty of the law. Civic authorities of Louisville have been most cooperative in helping us keep an eye on these young men while they are in town and in enforcing the Kentucky Liquor Law, at least where trainees are concerned.

Civilian Advisory Committee

We have a Civilian Advisory Committee, made up of representative citizens of Louisville and Elizabethtown. The committee was appointed by former Governor Willis of Kentucky in cooperation with the late Mayor Taylor of Louisville. It includes subcommittees on health, religion, education, physical training, self-government, entertainment, and a parents' committee interested in the general well-being of the trainees.

This advisory committee has been very much interested in what we are doing, and its members have rendered services beyond price. They have given us the civilian viewpoint on our program and have provided an example of cooperation between the civilian and the military which should set the standard for all communities in a national UMT program, or teen-age selective service.

Summary

This, then, is the outline of what we are trying to do at Fort Knox. Our primary mission is to turn out well-trained and well-disciplined soldiers. Military training is the reason for our existence, and we carry out a full program honestly. Press stories sometimes neglect training aspects because they have little news value; reporters prefer to publicize extracurricular activities because those features have greater reader interest. This frequently gives a distorted picture of the unit. Our trainees are trained as hard and conscientiously as any soldiers anywhere. They have never been coddled. On the contrary, the regime here is as strict as that in any military organization, the hours as long, the work as arduous, and the fatigue and guard as inevitable. There has never been any doubt in my mind as to our mission. If we fail to instill true discipline in our trainees, if we fail to develop and teach concepts of leadership suited to 18-year-old American boys, if we fail to instill in them a sense of self-respect and personal responsibility, and an understanding of their duties and obligations, we will never succeed no matter how complete our hobby shops or how comprehensive our educational opportunities. If we do not develop good morale and a spirit of cooperation in the troops; in a word, if we do not make them good soldiers first, all the elaborate structure of extracurricular activities will collapse like a house of cards.

Unfortunately, the results of our program can be judged only at Fort Knox. But the proof is here, ready for inspection. We encourage our visitors to talk to trainees, to talk to our platoon sergeants, to drop in at our mess halls, our Post Exchange, our Service Club, and to see for themselves the results of what we are doing. The real test of our methods is the morale of the battalion, the enthusiasm with which the men do their work, and particularly the attitude between the trainees and their instructors. These boys are not angels, and we have our share of malcontents. You can find trouble if you look for it, but you will have to look.

THE COMMANDING GENERAL OF OUR FAMOUS "HELL ON WHEELS" DIVISION GIVES US A REPORT ON PEACETIME ACTIVITIES

The Second Armored Division In Peace

by Major General James G. Christiansen

IN 1939 and 1940 the world military experts focused their attention on the "Blitzkrieg" tactics of the powerful Panzer units of the German Army. In the United States, advocates of mechanized warfare and Armor, such names as Chaffee, Devers, Patton, Crittenberger, Gillem, Henry and others, were given their opportunity to produce.

The first large armored units for our army were provided when two Armored Divisions were authorized and one of these, the Second Armored Division, was activated at Ft. Benning, Georgia, on 15 July 1940. Later other Armored Divisions were formed until a total of sixteen was reached.

Today, after eight years and one war, the Second Armored Division remains the only Regular Armored Division in the U. S. Army. It saw action on the beaches of North Africa and Sicily, then went into Normandy close upon the heels of our invading infantrymen to blaze its name across France, and into Belgium where elements of its Reconnaissance Battalion were the first Allied Troops to cross the border, later going into Holland and Germany.

Breaching the Siegfried Line, helping to reduce the Bulge, and participating in many other battles were but part of the day's work to the fighting men of the Second Armored, known by this time much better by its nickname "Hell on Wheels," bestowed upon it early in its training career by a beloved commander, General George S. Patton, Jr.

It was this vaunted "Hell on Wheels" Division which became the first American unit to move into Berlin, later to be relieved by the also famous 82d Airborne Division.

Today this remnant of a once large and powerful Armored Force is stationed at Camp Hood, Texas where it has settled down to its postwar training role. Combat Command "A," its only active element at present, is commanded by Brigadier General John H. Collier, who joined the Division as a Tank Battalion Commander early in 1941 and has remained with the Division, except for a few weeks in 1946, until the present time. He is one of the few old-timers left in the Division who can recall the hectic training days, weeks and months of 1941 and 1942 prior to the time the Division sailed for North Africa in 1942.

Major General James G. Christiansen was graduated from the U. S. Military Academy's Class of 1918 as a Second Lieutenant in the Corps of Engineers. His assignments between the wars included a two-year tour with the Alaska Road Commission and a period as instructor in Military History at West Point.

General Christiansen is a graduate of the Engineer School Courses, the Command and General Staff College and the Army War College. During the war he served successively as Chief of Staff of Army Ground Forces and of the Philippines-Ryukyus Command. He is now Commanding General of the Second Armored Division.

Few are the members of the Division who remained with it throughout its complete existence. Some of them are Captain George M. Warren, presently its Assistant Adjutant General, WOJG Onie O. Ledbetter, First Sergeant George Murphy and a small handful of others.

The postwar training of the Division follows the broad, well-rounded training prescribed by Army Field Force directives. Since its return to the United States the Division, or elements of it, have taken part in Task Force Frost, Task Force Frigid, Exercise Seminole, Exercise Mesquite and special air transportability training for Armored Units. All of these are in addition to the normal training of an Armored Division in reconnaissance, tactics, gunnery, maintenance, and small scale maneuvers at Camp Hood.

Camp Hood, located in the central part of Texas and consisting of approximately 155,000 acres, is considered one of the best, if not the best, of the training areas under the jurisdiction of the Army. It has a varied terrain which is slightly rolling in some portions, with quite rugged low hills, thick with underbrush, in others. The training facilities on the reservation in the way of ranges are certainly equal to the best in the country. All in all, it is an ideal place for an Armored Division to train.

It must be noted that only small detachments of the Division participated with Task Forces Frost and Frigid. Exercise Seminole, which was a full scale landing operation of an armored combat command in a combined operation with the Navy and the Air Force, found Combat Command "A" of the Division, reinforced by Army and Service Troops, marching by rail and motor to San Jacinto Ordnance Depot, embarking in APA's, AKA's, LST's, LCT's and landing on a beachhead established by an assumed Infantry Division on the Florida coast. Its mission was to destroy and expel from our shores an AGGRESSOR force which had made an attack on the country.

Seminole was a training exercise rather than a maneuver, although some maneuver situations were brought into the exercise to give the staffs of the Division and Combat Command experience in the field.

The technique of loading and landing armored vehicles from landing craft was practiced at Camp Hood for weeks in mock-ups under the supervision of a transport training unit of the Marine Corps.

three phases. The first phase was the ground training. This was done on the ground at Camp Hood. Using a fuselage of a salvaged C-47 and mock-ups of the C-82, men and officers of the 41st were instructed in loading, stowage and lashing of air craft by a team of officers and men of the 82d Airborne Division.

The second phase of this training was actually the culmination of the first phase. Several C-82's of the Ninth Air Force landed at Camp Hood and the 41st actually loaded the planes with men, equipment and vehicles and were taken for a short ride in order that they could see the results of their training and get the feel of the air.

Starting on 9 March a five-day test was made of the effectiveness of their training. Again the huge cargo planes landed to be loaded, this time for a simulated combat mission. Once loaded the planes took off and landed the Armored Infantry over 500 miles away where the Armored Infantrymen unloaded and immediately went into simulated combat with an AGGRESSOR enemy.

The awful gap, reflecting on our prewar arrangements, was *the absence of even one armoured division in the British Expeditionary Force.*

Winston Churchill in *The Gathering Storm*

Courtesy Houghton Mifflin & Company Publishers.

During Seminole, men of the Division saw and operated against AGGRESSOR for the first time. As a result of the use of AGGRESSOR troops and equipment, Seminole had an aura of reality for the intelligence phase of the training, for naval gunfire operations, and for fighter-bomber and photo reconnaissance work by the 12th Air Force.

On the return from Seminole to Camp Hood the Division made an overland tactical march from San Jacinto Arsenal, where they debarked. In this march all vehicles of the Division traveled in one column over main and secondary roads of Texas for a total road distance of over 250 miles, which was easily covered in three days. B Company of the 17th Armored Engineer Battalion and the attached 988th Engineer Treadway Bridge Company strengthened dozens of small bridges, made innumerable by-passes around weak culverts and assisted the Combat Command in making five river crossings. The 12th Air Force with their Jet P-80 fighters furnished column cover for this march.

As soon as Seminole was over and before the maintenance work was completed on the vehicles of the Division after the 250-mile march, plans were under way for air transportability training for the 41st Armored Infantry Battalion. This training was carried out in

Upon completing this mission they reloaded for another flight of several hundred miles and landed again to perfect their technique of unloading from the planes under simulated combat conditions. The training in air transportability of the 41st Armored Infantry was completed as they were landed at the airstrip at Camp Hood on March 14th.

Eventually, it is planned that all units of the Division will have air transportability training. But so far only the Armored Infantry Battalion has had the opportunity.

Exercise Mesquite was conceived and designed to train and perfect the men of the Division and the Jet-Fighter pilots in the technique of air-ground coordination between high-speed fighter-bombers and armored task forces. Planning was begun early in the year and final details were resolved at a conference in mid-April. On 6 May the first phase of Mesquite began.

Here again, the Second Armored Division made use of the Army's latest maneuver enemy, AGGRESSOR.

Assuming that AGGRESSOR had landed on the Gulf Coast of Texas and established a beachhead and that an AGGRESSOR armored task force had forced itself inland to the vicinity of Camp Hood, the Second Armored Division had been ordered to cut this task

force off from the beachhead and to destroy any AGGRESSOR which were thus isolated. The 12th Air Force would support the operation with a squadron of P-80 fighter bombers and a flight of FP-80 photo reconnaissance planes.

The task force having been cut off, Combat Command "A" was ordered to pursue the remnants of AGGRESSOR in the Camp Hood Area. P-80 reconnaissance planes equipped for photo or visual reconnaissance work began flying sorties to determine the whereabouts and strength of the AGGRESSOR elements. Fifty men and officers of one company of the Division using AGGRESSOR uniforms and dummy equipment began to build a picture on the ground which could be seen from the air. For four days this picture grew as enemy columns were shown moving into the area, defense installations were being constructed along a stream, artillery units were going into positions, mine fields were being laid and other forms of activity were depicted in order that the reconnaissance planes could build the whole picture for the ground and air commanders for their coordinated attack.

Patrol activity began on the night of 9 May by AGGRESSOR elements against the bivouacs of the units of the Combat Command. By morning the intelligence picture of the AGGRESSOR situation had been made clearer by information obtained from interrogation of prisoners and captured overlays.

Then a series of coordinated attacks began against the AGGRESSOR positions. The actual men representing AGGRESSOR were cleared from the impact area of the reservation for each of these attacks, leaving dug-in tank hulls and guns as the targets to be used by the planes and tanks in their attacks.

This series of attacks was actually two separate maneuvers over the same general terrain area on four different days, varying the direction of attack in order to give the ground troops and the Air Force an opportunity to perfect the technique of coordination which is so vital between fighter-bomber cover for armor and the hard hitting tanks on the ground.

Realism and actual combat conditions were stressed at all times. 12th Air Force A-26's were used as AGGRESSOR planes and, during the actual attack phase of the problems, the tanks, artillery and infantry used live ammunition to mark targets while the Air Force used 100-lb. dummy bombs on selected missions. Tactical air control parties with the ground troops were used to control the planes and guide them onto the desired targets. Both the ground and air commanders were highly pleased with the results obtained by the time Mesquite was ended on 15 May.

Not everything the Second Armored Division has done since it has settled down at Camp Hood has been of a special training nature. Disaster teams of the Division were on hand to help in the Texas City holocaust. Other disaster teams have been sent to communities in the Fourth Army Area stricken by tornadoes.

The members of the 41st Armored Infantry Battalion believe themselves to be the "paradingest" battalion in the Army. They have paraded in New Orleans, Beaumont, San Antonio, Temple and various other places, for a total of ten parades in two years.

Combat Command "A" hits the beaches in Seminole.

Each summer the Division digs into the problems involved in helping the ROTC, National Guard and ORC units which train at Camp Hood during summer months. This summer, this work will start on 30 May when 265 ORC personnel are scheduled to arrive as the first increment to have the 14-day training period. Other groups smaller or larger will continue to arrive at two-week intervals until the middle of September.

On 19 June too ROTC students will arrive for their annual six-week encampment and the Division will give them administrative support as well as conduct demonstrations for them throughout the period.

In August some 9,000 Texas National Guardsmen will arrive for their summer camp. Again the Division will give certain administrative support, assist in their training as requested and stage demonstrations for them.

All in all, the men of the Second Armored Division have had little time to be bored since the division returned to the States.

The Third Armored Training Division

by Major C. E. Dunlap, Jr.

Initial training of the soldier is the crucial period. From one of our quartet—soon to be an octet —of manpower sources for the Field Forces comes an account of the training program.

Reactivation

ON July 15th, 1947 the 3d Armored Division was reactivated at Fort Knox, Kentucky and took over the functions of the Replacement Training Center located at that station, with a primary mission of giving individual training to about one fourth of the enlisted men entering the Army for the first time.

In keeping with its brilliant combat record the recreated 3d Armored is carrying on the mission of indoctrinating, orienting, and training enlistees for the Army with all the "verve and dash" which so distinguished it overseas. Outstanding for its "firsts": first to fire an American artillery shell on German soil; first to breach the Siegfried Line; a part of the first army to invade Germany from the west since Napoleon made his tortuous way to Moscow; first to capture a German town; first to down a German airplane over German soil, the 3d's mighty tradition is being carried on by an alert and conscientious group of officers and men on the site where armored troops have trained since 1940, when it was established as an Armored Replacement Center.

Today, however, the training is not armored but is designed to turn out an individually trained soldier capable of serving anywhere in the Army. At the completion of training the new soldiers are sent to all arms and services as directed by The Adjutant General. As an adjunct to the training program, in its administrative handling of the trainees the Division has incorporated several new departures, some of which are importations, adaptations, and improvisations of the better proven and tested features of the Universal Military Training Experimental Unit at Fort Knox, while others are of the Division's own devising. These features, plus the irresistible desire to carry on the "first" tradition, makes this a unique training organization.

Major General Roderick R. Allen graduated in 1915 from the Agricultural and Mechanical College of Texas with a Bachelor of Science Degree. He was commissioned a second lieutenant of Cavalry in November of 1916. During World War I he served in France with the Third Cavalry, and as an observer with the First Observation Squadron.

General Allen commanded the 12th Armored Division in Europe in the late war. In 1946 he received a Doctor of Laws Degree from the Agricultural and Mechanical College of Texas. He is now Commanding General of the Third Armored Training Division.

The reactivation of the 3d Armored Division stems from a decision by Department of the Army in 1947 to give to the then Replacement Training Centers the names of wartime divisions with outstanding combat records as a means of encouraging enlistments and building up morale and "esprit de corps" for both the new trainee and the training cadre. The RTC at Fort Knox was appropriately designated the 3d Armored Division (Training), the title of which brought along with it the many wartime honors and citations.

To enable the units to carry out their primary function as training organs, all administration, supply (including transportation) and coordination are centralized at Division level. Of necessity this required a top-heavy Division Headquarters, which is authorized 121 officers and warrant officers and 887 enlisted men, including a Band. The authorization for training units, which includes both trainer and administrative overhead, totals 392 officers and 1621 enlisted men. The authorized trainee load is 10,158 of which 2490 are Negro. The 3d Armored Group trains all of the Negro trainees except those who attend the Leaders' Course or receive specialist training.

The Training Period

During his first week in the Division the trainee is received, indoctrinated, assigned to a training company, processed (to include testing, classifying and initiation of records), outfitted with clothing and equipment, oriented as to Division and Post facilities, and shaken down by pre-cycle training in the most basic subjects. The trainee starts his processing by passing through

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Major C. E. Dunlap, Jr., entered the service in early 1941, and was first assigned to an antiaircraft unit. He later served with the Replacement Training Center at Fort Knox and the Reception Center at Camp Atterbury, Indiana. He has been with the 3d Armored Division since 1947 as Assistant Chief of Staff, G-2.

the clothing warehouse where he receives all of his military clothing. Here he is measured, his clothing issued, and then to insure a perfect fit, all outer clothing is trial fitted. For those individuals who cannot be fitted with stock sizes, alterations are made to their measurements and then their uniforms are delivered to them at their company within forty-eight hours. With the preparation of the service record and all other allied records the second step in the processing cycle is completed. In keeping with the Army's Career Management Plan, a complete and comprehensive battery of tests is administered by trained personnel of the Classification Section to each individual who passes through the Division. These tests have been so designed by The Adjutant General that selectivity indicated by a certain test or group of tests forms the basis for prerequisites necessary in any specialized training the Army may give. The results of these tests in conjunction with the personal history interview enable Classification to place the man in a field of interest where he is most likely to succeed and be of most value to the Army. Included in the battery of tests given are the following:

Army General Classification Test
Army Radio Code Test
Electrical Information Test (given only to those with 90 or higher AGCT)
Army Preference Blank
Mechanical Aptitude Test
Shop Mechanics Test
Automotive Information Test
Clerical Speed Test
Radio Information Test (given only to those with 90 or higher on Electrical Information Test)
Motor Vehicle Operator's Physical Aptitude Test
Officer's Candidate Test (must have AGCT of 110 or higher)

The results of all of these tests are posted on the individual's WD AGO Form 20 and are therefore available during his tenure of service.

With his processing week over, the trainee is ready to start his training cycle. This is normally thirteen weeks of training, and although the cycle being used at the present time has been reduced to eight weeks this is only an expedient to take care of a particular situation, and as soon as this situation has become clarified the thirteen-week cycle will again be used. For this reason the thirteen-week cycle will be discussed, since the shorter program is accomplished by reducing the subjects taught and the hours assigned to some subjects, which remain in the eight-week Mobilization Training Program.

The Division is charged with seven separate types of training. They are: the thirteen-week training program for newly enlisted volunteers; the short refresher course for men with prior service in the Navy, Coast Guard and Public Health Service reenlisting from civilian life; the training of bandsmen for Army Bands; a special Leaders' Course for new enlistees who have completed their basic training or for reenlistees who so desire; the continued training of specialists to include mess stewards, cooks, clerks, typists, supply personnel and motor vehicle mechanics; the training of enlisted men and officers assigned to the Division as trainers; and the training of officer and enlisted reservists.

The thirteen-week program is designed to transform men that are new to the Army into basic soldiers. The training is basic to all branches, in that all subjects taught are common to all branches of the service. These subjects are directed toward training the individual. This type of instruction provides the Army with a basic soldier who has been properly oriented and can fit into any Army unit with a minimum of additional training. Instruction is conducted eight hours daily, Monday through Friday. One of the more important aspects of this training is that of physical conditioning. One hour daily is devoted to this subject with the objective of bettering the physical condition of every man and to make him a better soldier by having a well developed and coordinated body and mind. The training is progressive in that it begins with simple conditioning exercises and develops into more strenuous forms of physical exercises.

A series of lectures delivered by the Division chaplains cover the fundamental moral principles and basic obligations of a citizen. The importance of self-control and self-discipline, the worth of right conduct, clean living and its reward, and the obligation of the soldier to his home, his family, his church, and his country are stressed. One hour per week is incorporated into the Troop Information Program. Preceding each class, an up-to-the-minute news summary is given. These subjects are informational in nature and many are held as open forums or discussions. This enables the trainee to enter into discussions with his fellow soldiers on many topics. The over-all objective is to create a more responsive soldier through a mental attitude favorable to leadership and training. The Army believes that America's security lies in a well informed soldier.

Relative to the weapons of war, the trainee's basic weapon is the M-1. Sixty-eight hours of instruction in sighting and aiming exercises, care and cleaning and actual firing of the rifle are conducted. The trainee fires a qualification course and the records that are kept of the individual scores indicate that ninety per cent qualify with this rifle. The minimum standards of attainment, as prescribed by the Department of the Army, are that each man have a thorough knowledge of the mechanical functioning and operation. He must be able to assemble and disassemble the weapon. He is instructed how to eliminate simple stoppages and malfunctions. The new soldier is instructed in several other weapons including the light machine gun, grenades, and the rocket launcher, commonly called the "bazooka." Each man is taught how to use them and is given the opportunity to actually fire these weapons.

The balance of the training program consists of such subjects as first aid, signal communication, personal

adjustment, guard duty, and individual tactical training such as map reading, compass work, night vision instruction, field fortifications, and scouting and patrolling.

In his twelfth week the trainee spends a full week in the field under field conditions. Throughout his training cycle he has gradually toughened and prepared for this week. The training runs along the following pattern: Upon receipt of the movement order, the battalion commander issues a warning order to all troops who are to participate in the week's activity. A reconnaissance is made of the area and the time, date and location are fixed. Normally the area is approximately sixteen miles from the Division area. The trainees are transported to the area in trucks and upon arrival at the campsite a tactical bivouac is instituted. Kitchens are set up and shelter tents are pitched. Regularly scheduled classes are held in this area to include night training. The soldier is taught how to orient himself on the ground and map, without the aid of a compass, by utilizing distinctive terrain features. He is taught how to use the sun and north star to determine direction. An interesting phase of training in this week is the night vision exercise. He is given the theory of light reflection, darkness adaptation, perception and scanning. One night he is taken out to put into practice the information that has been imparted to him. Scouting and patrolling occupy a goodly part of the week's activity. The trainee is instructed in day and night patrol formations, methods of movement by day or night, in night identification signals and the correct wearing apparel for patrols. The fifth day of this field training brings to a close the activity of the week. The camp is disbanded early in the morning and the men are marched back to the base camp, at the rate of two and one-half miles per hour.

Instruction in progress for 3rd Armored men.

The thirteenth and last week of training is devoted to clearing up loose ends, proficiency tests and graduation. One of the proficiency tests is entitled "The Military Stakes Course." It consists of thirteen stations and is designed to determine how much of the subject matter taught in the preceding weeks has been absorbed. At each station, the trainee is required to demonstrate his ability in a specific subject. The course is seventeen hundred yards long. It is spread over all types of terrain and for the maximum score must be negotiated within a time limit of twenty minutes. This tests the man's physical condition as well as his military education. The men being tested are given a score at each station. In order for the trainee to receive a passing score, he must amass 350 points out of a possible 500.

The final activity in basic training is the graduation exercises. The Combat Command Commander reviews the unit's achievements during the training and cites their record. Following this he addresses the graduating troops and wishes them good luck and Godspeed. Upon graduating the men are assigned to regular Army units in the United States or overseas.

The training of men with prior military service is another activity of the Division. Men reenlisting from civilian life with prior service in the Army or Marine Corps are processed and shipped to units as soon as disposition is received. Men who have served in the Navy, Coast Guard or Public Health Service are oriented to fit them into Army life. This training normally lasts three weeks, after which the men are assigned to regular units.

In the first week of their basic training, all trainees who claim musical aptitude are auditioned by the Division Band. If they demonstrate ability and so desire, at the completion of their basic training they are given an additional sixteen weeks of band training in the Band Training Unit. At the completion of this training they are available for assignment to any Army Band as directed by The Adjutant General.

A Leaders' Course

The Leaders' Course, a special course of instruction for potential leaders, was organized in May 1947. The purpose of this course is to develop the leadership potential of these selected soldiers early in their career by instruction and supervised guidance in the performance of duties as acting noncommissioned officers and instructors. It also serves as a preparatory course of instruction for men nominated to attend Officer Candidate School. It provides the Army Field Forces with men who have been fully trained and qualified as leaders. The entrance qualifications are high. The applicant must have completed basic training and have a score of ninety or better on the Army General Classification Test. A recommendation from his company commander is necessary. Rigid physical fitness tests are given. All applicants for this course are volunteers. It is open to the first-time enlistee after he has finished his basic training as well as to the reenlistee who has

come back into the Army for further service.

Training is divided into two phases, each of three weeks' duration. The first three weeks are devoted to academic work with the remaining weeks devoted to practical work. The curriculum includes: leadership training, physical training, combat fundamentals and reaction tests. Upon completion of the theoretical work the student is assigned to a training company for practical work. He is given an opportunity to put into practice the instruction he has received. At the Leaders' Course the student receives individual attention. Classes are small to insure maximum personal instruction. Each man is interviewed by senior officers to determine his background, his problems, his capabilities and limitations. Emphasis is placed on the development of self-confidence. Many of the graduates are on duty with the Division as instructors, having profited by the knowledge acquired at the Leaders' Course. Other graduates are on duty throughout the world.

Specialist Courses

The training of specialists is the newest program in the field of training with which the Division is charged. It is designed to continue the training of qualified individuals after they have completed their basic training so that they will become technically proficient in the such specialties as Mess Steward, Cook, Clerk and Mechanic. Personnel completing this specialist training will be assigned to Army units as directed by The Adjutant General.

Cadre Instruction

Because of the continual turnover of assigned overhead personnel, particularly those who are used as trainers, it has been necessary to establish cadre schools for instruction in "methods of instruction" to all of the newly assigned officers and enlisted men. This school is of one week duration for officers and two weeks for enlisted men and is designed to give the latest methods in Army instruction. The Division goal is 100% attendance by every individual who will be responsible for training.

Reserve Instruction

The training of reservists, both officer and enlisted, is carried on within the Division. Reservist tours of duty vary from several days to several months. Personnel are interviewed upon arrival and assigned to duties that correspond to their past experience and education. This gives them an opportunity to stay abreast of the latest training methods by actually performing the duties. Many men from the Civilian Components have brought with them valuable ideas and methods of instruction that have been incorporated into the training program.

Spiritual Training

During the thirteen-week training cycle the Chaplains play a vital role in the program. This includes seventeen hours of lectures at company level to trainees on sex morality, citizenship and other social subjects. They also take part in graduation ceremonies and other group functions in addition to many hours of personal interviews and counsel to individuals.

Civilian committees have been set up in the surrounding communities, to work with the Division in solving the many problems which arise when civilian and military personnel are thrown together during off-duty activities. The Division believes that a well-informed public is vital to the success of its mission and the mission of the Army.

Conclusion

It is the aim of the Division to give the best possible instruction for the length of time a trainee is in its command; to make his surroundings as near home-like as possible and to demand of him the same consideration he would grant in his home. All contacts with him are as individualized and personalized as possible. It is believed that with the accomplishment of its goal the division will have gone a long way toward making the young soldier of today understand what the Army expects of him, thus invoking his sense of devotion and loyalty, and making him a better soldier and citizen.

OUR CONGRATULATIONS TO THE CADETS IN THE 1948 GRADUATING CLASS AT THE UNITED STATES MILITARY ACADEMY RECENTLY COMMISSIONED 2ND LIEUTENANTS IN ARMORED CAVALRY

J. B. Bellinger
T. W. Bowen
W. C. Buckner
W. E. Byers
T. B. Cormack
R. H. Cushing
D. E. Deehan
L. T. Doyle
J. B. Hall
J. B. Hughes
J. B. Hendricks
J. J. McCuen
J. W. McEnery
G. R. McSpadden
E. B. Nelson
D. F. Packard
W. W. Plummer
H. Perry
W. G. Thomas
F. E. Tibbets
J. G. Tuthill
T. B. Tyree
E. C. Whitehead

STAIRWAY to the STARS

by Lieutenant Colonel Paul M. Morrill

The Executive Officer of the Cavalry Branch of Career Management Group in the Army's Personnel and Administration Division charts the course for the officer career in Armored Cavalry. How do you fit the pattern?

SOME men rise to high rank and position with the speed of a rocket. Some achieve their ultimate goal in one mighty leap. Some, by virtue of birth, personality or intelligence, are marked for success at an early age. Few of these are found in the army. For most of us the pathway to higher rank and position is steep and tortuous. Slowly and steadily we climb—each step representing a new level of knowledge, experience and responsibility. Career Management may be likened to a blueprint from which each of us can build our own "stairway to the stars." Just as a carpenter builds a flight of stairs, so do we all construct our own careers. If the "lumber" be well seasoned and the "tools" sharp, then with the requisite amount of effort and skill we can build a "stairway" that will stretch unbroken to the "stars" of our desire. If any of these be lacking our "stairway" will stop short of the goal and leave us stranded with our ambitions unfulfilled.

Career Management is divided into many phases. It shall be my purpose in this article to discuss only that phase which pertains to the regular officers of the Armored Cavalry. Much has been written on this subject. Several official directives have been published and more are contemplated. Conferences have been held and speeches given. The subject is taught in our service schools. In spite of all this, the daily inquiries on various operational aspects of Career Management are an indication that it is not yet fully understood throughout the service.

A successful career in the army, as well as in any other field of human endeavor, is composed of two ingredients—ability and opportunity. Career Management will attempt to equalize opportunity so that ability may be seen and evaluated in its true light. It must be realized that the basis for any successful program of this type is a standard against which the careers of individuals can be measured. This is provided in a Career Pattern. These patterns are made up by the different arms and services and reflect the particular problems facing each branch. This must be so as it is obvious that the assignments and schools necessary to turn out a well-rounded Armored Cavalry officer will differ greatly from those required of, for example, an Ordnance or Chemical Corps officer.

The Armored Cavalry Career Pattern is shown on the accompanying chart. This pattern represents an ideal. It may never be duplicated in the career of any one officer, but it does set a standard for all. Deviations must be kept to the minimum. Furthermore, it is designed for the officer who is just now beginning his career. Officers who have up to twenty-one years of service will be fitted into the pattern wherever possible. Their schools and service will usually fit parts of the pattern and every effort will be made to give them such assignments as will best cover the missing types of service. The first step in this process was the awarding of Constructive School Credit Equivalents. Those officers with more than twenty-one years of service are beyond the scope of this program as designed and no attempt will be made to fit them into the picture.

Now look at the pattern. It covers the first twenty-one years of an officer's service. The ranks shown at the top are the permanent grades appropriate for that length of service. You will note that there are three types of assignments—mandatory, selective and incidental. The mandatory assignments are those considered necessary to qualify the officer in his basic army. Let us first consider these mandatory assignments.

During the first year of his service the Armored Cavalry officer will complete the Basic Course. That means that he will attend the Branch Immaterial Basic Course of The Ground General School at Fort Riley, and the Basic Course of The Armored School at Fort Knox. These courses will run consecutively and cover one academic year. Following this he will have two years of troop duty in a tank or mechanized cavalry platoon. These first three years are vital to the proper beginning of the young officer's career and you will note that nothing else in the pattern is allowed to infringe on this period.

Between his third and seventh year of service he should have a year of staff duty on a battalion or squad-

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Lieutenant Colonel Paul M. Morrill left a company command in 2d Armored Division in 1941 for observer assignment with the British in Egypt. As war broke he became Executive Officer of the Massaua Naval Base in East Africa. Next came assignments as Assistant G-3 of the Armored Command at Knox, and of AFHQ-Italy. He is now Executive Officer of the Cavalry Branch.

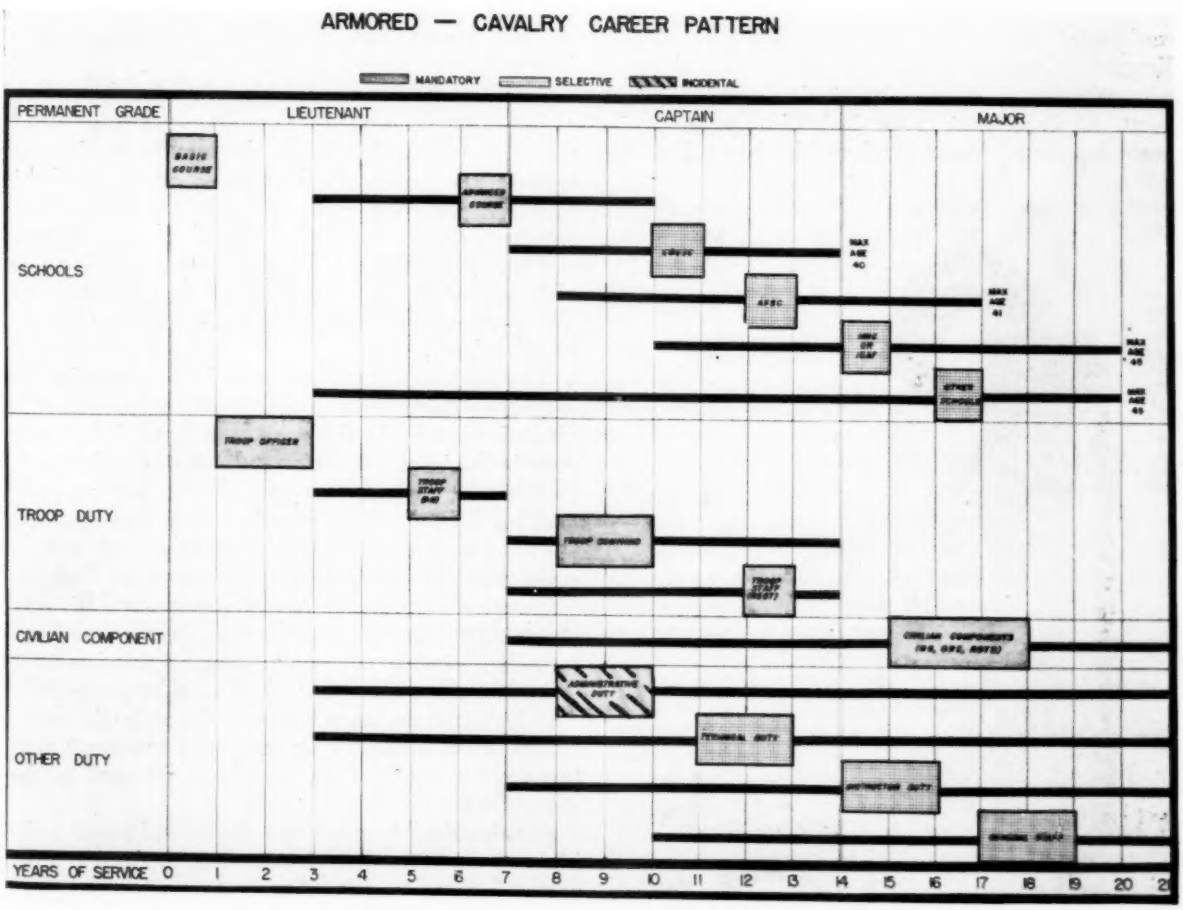
ron level. Between his third and tenth year he will attend the Officers' Advanced Course at the Armored School. At some point between his seventh and fourteenth years of service, and after completion of the Advanced Course, he will have two years of duty as the commander of a tank company or mechanized cavalry troop. During the same period he will have a year of staff duty in a combat or reserve command of an armored division or in an armored or mechanized cavalry group.

Finally, at some point after his third year of service, he can expect to serve a three-year tour with one of the civilian components. Every effort will be made to alternate the troop assignments between tank and mechanized cavalry units. These, then, are the mandatory assignments. After completion of these duties all Armored Cavalry officers should reach their twenty-first year of service (and consideration for promotion to permanent Lieutenant Colonel) thoroughly qualified and well-rounded. The opportunities will have been provided and the rest is up to the ability of the individual.

Now let us consider the selective assignments. These assignments are desirable but selection precludes all Armored Cavalry officers from getting them. Selection is based on general efficiency and ability. About one-half of the regular officers of the army (and of the Armored Cavalry) will be selected for attendance at The Command and General Staff College. This selection will take place between the time when the officer completes seven years of service and the date when he becomes forty-one years of age.

Between eight years of service and forty-two years of age about ten per cent of regular Armored Cavalry officers will attend the Armed Forces Staff College. Between their tenth year of service and their forty-sixth birthday about five per cent will attend either the Industrial College of the Armed Forces or the National War College. Between their seventh and twenty-first year of service certain selected officers will be sent to Air Force and Navy schools as well as to foreign military schools where appropriate. Officers will not be ordered to any school unless they have completed or received constructive credit for the next lower school, nor will any officer holding constructive credit for the Command and General Staff College or higher school be sent to the school for which he has already been awarded credit.

Also, at any point after completion of three years' service, certain selected officers may be ordered to technical duty such as development work in motors, communications, weapons and other fields related to the Armored Cavalry. These assignments may be preceded



by graduate study at civilian institutions. Certain officers will be selected for duty as instructors in service schools. Also some officers will be required for General Staff duty on many levels. It must be emphasized that these are all *selective* assignments and such selections must be based on the record.

Incidental assignments are those administrative or other assignments that must be filled but which do not, of themselves, advance an officer's value to his branch. Officers of all grades get some of these assignments but the best officers get less than others.

Although not shown on the pattern, it is the intention of the Army and the Armored Cavalry branch to select a very few officers of the highest calibre who will, after completing twenty-one years of service, be assigned to command of tank battalions and mechanized cavalry squadrons for a period during which they will be closely observed for the purpose of earmarking future higher commanders.

So much for the Career Pattern. Now let us see how all this might work out in the hypothetical case of Second Lieutenant John Q. Doe who has just been commissioned as a regular officer of the Cavalry. His assignments have been placed on a "staircase" which is reproduced in the accompanying chart.

Lieutenant Doe starts his army career by attending the Officers' Basic Course at the Ground General School at Fort Riley, Kansas, after which he attends the Officers' Basic Course at The Armored School at Fort Knox, Kentucky. He is now ready for troop duty and under current policy is also due for his first overseas assignment. He is assigned to the 18th Cavalry Reconnaissance Squadron, Mechanized and he proceeds to his station in Puerto Rico. His squadron commander, being thoroughly imbued with the principles of Career Management, arranges for him to command, for six months each, a platoon of a Reconnaissance Troop, a platoon of the Assault Gun Troop and a platoon of the Light Tank Company. This is followed by six months as Motor Transport Officer of the Headquarters and Service Troop.

At this point Lieutenant Doe passes his first milestone. He has now completed his first three years of service and his probationary period is at an end. Due to the excellent instruction received at Riley and Knox and the sympathetic consideration of his squadron commander who gave him the opportunity to acquire a broad background of actual experience, as well as to his own serious application to the task of qualifying himself, he passes with flying colors. He is now well started up the "stairway to the stars." At this point he is also promoted to First Lieutenant, Regular Army.

His squadron commander now decides that some staff experience is in order and he assigns Doe as squadron adjutant for a period of six months during which he expects Doe to learn all he can about the administration of the squadron. Doe, being ambitious, spends some of his extra time with the personnel and supply officers. The next six months' period is spent as squadron liaison officer during which he is under the supervison of the squadron S-3 with considerable time being spent with the S-2. Having completed his three years overseas he is now due to return to the United States.

After taking some leave, he is assigned to Army Field Forces Board Number 2 at Fort Knox, where he spends a year as a test officer in the Automotive Section and another year as Board Librarian. At the end of this period he is released at the request of the Career Management Group to attend the Officers' Advanced Course at The Armored School. He graduates from this course with an enviable class standing and thus completes his first seven years of service and is promoted to Captain, Regular Army.

This initial phase of the Career Management period is designed primarily to qualify the individual officer in his basic branch. In this hypothetical case it has been done in the ideal way—Basic and Advanced Courses at The Armored School, two years of troop duty on a platoon level, one year of Squadron staff duty and two years of technical duty connected with his basic arm.

To continue the career of Captain Doe, we find that he is now due for an overseas assignment and his next tour of duty is as the S-2 of the 6th Constabulary Regiment in Germany. After one year on this job he is shifted to command the 11th Tank Company (M). This is a separate organization stationed in Erlangen, Germany and Captain Doe remains in command until two years later, at which time he is returned to the United States.

At this point his record is reviewed and found to be in the upper 50% of all Cavalry Regular Army officers and he is therefore ordered to the Command and Gen-

eral Staff School at Fort Leavenworth, Kansas. He applies himself to his studies and stands well up in his class at graduation. He is then assigned to The Ground General School at Fort Riley for duty as an instructor in the Department of Intelligence.

Here he remains more than a year after which time, because of his outstanding record, he is selected for The Armed Forces Staff College at Norfolk, Virginia. The Commandant of the Ground General School concurs in his release and he thus becomes one of the top 10% of the Regular Officers. Although this school is only of five months' duration, it deals in inter-service problems and Doe finds himself hard put to assimilate the instructions. But with his customary zeal he applies himself with such vigor that he completes the course with distinction.

Being due for overseas again, Captain Doe departs for Japan where he is assigned to General Staff duty in the 1st Cavalry Division. At the conclusion of one year on this job it is time for us to again take stock of his record. He has now completed 14 years of service. The second phase of his Career Management period is designed to broaden his training and experience. During the seven years of this second phase, Captain Doe has graduated from the Command and General Staff College and The Armed Forces Staff College. He has had one year of duty on a regimental staff, two years in command of a tank company, a year and a half as an instructor and a year of General Staff duty. His record is outstanding and he easily is approved by the Selection Board for promotion to Major, Regular Army.

He remains on his present assignment with the General Staff of the 1st Cavalry Division for the remaining two years of his current overseas tour and returns to the United States where he spends the next three years as a Mechanized Cavalry Instructor to the New Jersey National Guard.

At the completion of this duty he would ordinarily be scheduled for another tour of foreign service, but, because of his outstanding record, he is selected for the National War College from which he graduates with distinction and thus moves into the top 5% of all Regular Army officers—a sort of military Ph.D.

Having been deferred long enough to attend the National War College, Major Doe now goes to Panama as Executive Officer of the 45th Mechanized Cavalry Reconnaissance Squadron where at the end of a year we find it time to again evaluate his record.

He has now completed the third seven-year phase of the Career Management period which is designed to prepare him for future assignments on high-level staffs and for future higher command. His record is so outstanding that the Selection Board has no hesitation in approving him for promotion to Lieutenant Colonel, Regular Army. He is now a marked man in the Armored Cavalry branch and his assignment to command the 45th is directed. All concerned watch him carefully for the next two years, and he comes through with flying colors. Thus ends the Career Management Period. Colonel Doe has now completed twenty-three years of excellent service in which opportunity and ability have joined in the development of his career. The rest is up to him.

However, I am sure you will agree that it will not be long before the "Stars" toward which he has climbed so steadily will sparkle brightly on his own capable shoulders.

Armor is still the "king" of the ground battlefield, although it is clear that the terrific velocities of new guns, the increasing power of new explosives, the greater and greater use of ground mines and the growing predominance of the plane and the missile have tended to decrease its relative importance. The trend toward tracked armored vehicles is pronounced; the field artillery of tomorrow will consist almost entirely of self-propelled guns, or a species of tank. The merging of armor and the other ground arms will become more and more complete, and tanks will become rocket launchers, artillery pieces and personnel carriers, the spearhead of the ground armies.

Hanson Baldwin in *The Price of Power*

Courtesy Harper & Brothers Publishers.

Army Field Forces Board No. 2

by Colonel George W. Read, Jr.

What are we doing in the way of Research, Development, Tests? The President of one of our four Service Test Boards tells us some of the things that can be told.

ARMY FIELD FORCES BOARD NUMBER 2, located at Fort Knox, Kentucky, is one of the four service test boards set up within the Army Field Forces. It is an activity exempted from Field Army control and is under the direct supervision of the Chief, Army Field Forces.

The history of Board Number 2 may be traced back to the numerous branch boards which existed before and during World War II. These boards were charged with the responsibility of developing and service testing all items of equipment used by that arm. Obviously, there was considerable overlapping and frequently insufficient personnel to adequately cover all classes of equipment. As a part of a comprehensive reorganization of the Army Ground Forces, all branch boards were discontinued as of 30 September 1945; their responsibilities were reassigned to numbered Ground Forces Boards (now called Army Field Forces Boards) on a functional rather than a branch basis. Army Field Forces Board Number 2 has succeeded and absorbed, either totally or in part, the responsibilities formerly delegated to The Armored Board, The Tank Destroyer Board, The Cavalry Board, and The Landing Vehicle Board.

Army Field Forces Board Number 2 is responsible for service testing the following ground equipment of the Army Field Forces: all automotive equipment, weapons, ammunition, and fire control equipment of combat vehicles, amphibious equipment, medical equipment, and engineer equipment. The mission of the Board with respect to the equipment mentioned above is to: (1) evaluate all recommendations for the development of new or improved existing equipment which may be submitted to them, (2) review and study foreign equipment, (3) prepare military characteristics and recommendations for development, (4) assist Army Field Forces to maintain contact with development agencies during all phases of development and engineering tests, (5) perform user's tests of equipment when directed by Army Field Forces, (6) recommend modifications in or standardization of items tested, (7) recommend classification of standard items of matériel, (8) recommend basis of issue of items to be standardized, (9) assist in the preparation of basic training literature on the drill and technical care of matériel tested, (10) continue observation and review of reports of performance of standard items, (11) recommend maintenance procedure, replacement parts, and equipment for items tested, and (12) recommend to the appropriate service school the type of training aids considered suitable and desirable.

The normal approach to accomplishing this mission is to make a thorough study of combat action histories, battlefield reports, and recommendations from schools, troops, and combat experienced personnel to determine the requirements of the field forces within the limits of our responsibility This study considers the policies and developments in foreign countries. When it is finally determined that a requirement exists, or upon receipt of directives from Army Field Forces, military characteristics are drawn up for a certain type equipment and submitted to the Chief, Army Field Forces for approval. These characteristics are in the form of general statements and do not contain any technical details. If the item is approved, it is submitted to a technical service for detailed study and execution.

The Board then follows the progress of the development through liaison visits and the reports of Army Field Force liaison officers on duty with all the technical services. An early pilot model is then sent to the Board where it is given exhaustive service tests. As a result of these service tests the item is recommended for acceptability, rejection, or improvements. Often Army Field Forces will then direct an exhaustive field test by a troop unit which is either observed or supervised by the Board.

Are we developing equipment entirely on the basis of events and requirements noted during the last war? Not exactly. However, certain classes of equipment are basic as long as armies exist. In order to destroy an enemy in the field and to occupy our objectives, matériel to give our forces mobility and fire power is still required. Hence, we are constantly improving our equipment to gain greater performance, reliability, and universality so that it may be used more efficiently and decisively. Whether, for example, the mobile armored fire power which we recognize now as the tank will continue to look like one in the future is difficult to say, but it is certain that some form of mobile protected fire power will be required.

Colonel George W. Read, Jr., was commissioned a second lieutenant at Le Mans, France, in April of 1919. During 31 years of active duty he has served in many sections of the world. In 1945 he became Assistant Division Commander of the Sixth Armored Division. He has just completed an assignment as President of Army Field Forces Board No. 2, and is on his way to a new post in Germany.

There is maintained a close coordination and liaison between the Board and the other boards and schools of the Army Field Forces in order that all may be informed of the trends and developments in the equipment. Each agency is given the opportunity to make recommendations in the various stages of development such as in drawing up military characteristics and plans of test. When the equipment is finally developed, liaison is maintained with the various schools for the mutual exchange of information leading to development of Tables of Organization, Tables of Equipment, and tactical capabilities and employment. The final result is that the Field Forces get the type of equipment which they want and will know how to use rather than something which the developing agency feels that they should have.

Following are some trends in the development of equipment within the field of responsibility of the Army Field Forces Board Number 2:

Under development at the present time is a complete family of military engines. They are based on three cylinder size. By combining these cylinders in various combinations of 4's, 6's, 8's, and 12's, and by running them at various speeds and by adding supercharging or fuel injection, a range of engines from 60 hp to 1400 hp will be available. The maximum possible number of parts will be interchangeable. For instance, a carburetor of a 4-cylinder engine may serve each bank of an 8-cylinder engine.

The engines will be "V" type or of the flat, opposed type, commonly known as the "Pancake Engine." The entire family will be air-cooled. The air-cooled engine has a number of advantages over the liquid-cooled engine some of which are as follows: (1) less horsepower absorbed cooling the engine, (2) simplicity in design, (3) less weight per horsepower, (4) less vulnerability to small arms and shell fragments, hence greater reliability, (5) shape more adaptable to hulls and bodies of vehicles.

Eventually all transmissions will combine hydraulic torque converters and planetary gear systems. Couplings will be the hydraulic type rather than the mechanical friction clutch which will allow shifting without a break in the flow of power. It is not contemplated to have automatic shifting; the driver will be required to select his own gear ratio. The manual operation of gear shifting is a necessity for cross-country operations because it will allow the driver to anticipate his requirements.

A new cross drive transmission has been devised for tracked vehicles which effects steering by varying the speed of each track, not by braking the inside track. A vehicle so equipped can make a pivot turn in its own length by the action of the tracks turning in opposite directions. For simplified operation a "wobble stick" control has been developed for tanks which will enable the driver to move forward, backward, and if necessary, at the same time to turn right or left by moving merely the "wobble stick" in the desired direction. The new engines and transmissions will be combined in neat packages which can be removed from the vehicles as a unit by a few quick disconnecting devices. Components and accessories are being developed in families and will be interchangeable throughout the wheeled vehicle classes and tracked vehicles.

The process of tank design now has been reversed. The new tanks are being designed and built around the gun we desire; whereas, previously the desired tank was built and then a gun was sought to fit it.

Our method of having our cake and eating it is to improve the designs of our tanks so that maximum protection is gained by angularity and placement of the heaviest armor in the most critical areas. The effect of inclining armor plate at an angle, either in the horizontal or vertical plane away from the line of fire, not only increases the thickness presented to the projectile but also introduces an additional factor comparable to ricochet effect which further decreases the probability of projectile penetration.

We are still dependent on high velocity in order to get good penetration and hitting ability. The flat trajectory and short time of flight offset inaccuracies in range and lead. Therefore, increasing the hole-punching ability of the gun requires a heavier gun with heavier ammunition. This trend to heavier guns with correspondingly heavier ammunition leads us to an impasse for there is a limit to the weight that can be handled by a man in a turret. Hence, a compromise has to be made between the size of the gun and ease of loading with correspondingly more aimed shots.

The present tank turret is an intricate and crowded mass of instruments and controls, more or less unrelated. The gunner must have manual dexterity, a gift of range estimation, and the ability to interpolate these ranges on the slight reticle. With the possible addition of an automatic ammunition loader and a range finder, it has become mandatory that an integrated turret be developed as a coordinated unit. The gun will be power operated and stabilized both vertically and horizontally. Integrated controls should insure us an excellent chance of first round hits.

These trends are illustrated by tanks now in development: The new Light Tank is about ready for test. This project will provide basic chassis components not only for the tank but for self-propelled guns for field artillery and antiaircraft artillery, personnel carriers, and cargo tractors; it will combine for the first time most of the development trends mentioned above. The tank is designed to facilitate ease of maintenance. An integrated turret will be provided. If the tank proves as successful as anticipated, many of the components and principles will be applied to other tanks and vehicles.

The present Medium Tank, M26, which saw combat service towards the end of the war, is still quite usable. However, the Board is making a thorough study of the tank in order to make all desirable improvements. The improved tank should have a better gun, more power, and an integrated turret.

In the heavy tank, field pilot models have been built ranging up to 95 tons and mounting a wide range of guns. These pilots should give us an indication of the feasibility of tanks in this weight class. The Board's views on heavy tanks are not completely stabilized and probably will not be until after exhaustive tests have been made on the pilot models. The size and weight of the complete round for these large guns cause a slow rate of fire. The size and weight of these large tanks impose problems in production and logistics which might force them into the class of special purpose weapons.

In personnel carriers we see a requirement for two types: a large carrier for about 24 men and one for about 12 men. The larger one requires light all-around armor protection against air bursts, light artillery fragments, and small arms. This carrier is a full tracked vehicle with excellent cross-country and road mobility. It will be used primarily to make tactical movements of large bodies of infantry, either laterally or in the approach march. The vehicle will save time, save casualties, and save the fighting strength of the men. However, it is not a fighting vehicle for it has few weapons. It may not be organic to combat units but will probably be pooled in transport companies. A prototype, the M44, Armored Utility Vehicle, appears on a number of Tables of Organization. The carrier as yet is not in its final form or in its ultimate assignment.

A smaller personnel carrier should transport a complete squad. It will have some fighting ability, a little more armor and plenty of machine gun power. Designed as an organic vehicle for Armored Infantry to replace the present half track, it can accompany tanks, pass through light opposition, or put troops directly on the objective.

The personnel carrier will have other uses, such as, a litter carrier, reconnaissance vehicle, command post, or cargo tractor. The carriers will use components of the new Light Tank.

The present trends and future developments in amphibious vehicles fall into three groups: (1) the Weasel type, (2) the DUKW type, and (3) the Landing Vehicle Tracked type.

The full tracked Cargo Carrier, M29C "Weasel" is not truly an amphibian since it lacks deep sea-going and surf characteristics; however, it is able to negotiate very marshy lands as well as calm lakes and rivers. A new amphibian is in the design stage. It will be considerably larger than the Weasel, perhaps with a capacity of 1½ tons. It will have a very low ground pressure and should be good on snow, swamp, and muskeg. This amphibian will have the new type air-cooled engine and transmission.

The 2½-ton DUKW saw considerable combat service in the last war and proved on the whole quite satisfactory. There is a trend, however, towards a larger capacity vehicle with increased speed afloat and better loading and unloading characteristics.

Although the Navy has the sole responsibility in the development of Landing Vehicles Tracked, the desires of the Army Field Forces are incorporated in their development.

In order to expand the capabilities of tanks, improved flotation devices are being developed for overwater movements.

A new jeep or ¼ ton is considered a low priority. The present jeep is a relatively efficient machine. However the Board is advocating a vehicle resembling the jeep but having greater cargo capacity, more power, and cross-country mobility. It is visualized that the vehicle will mount a lightly armored body for command and liaison purposes, a cargo body for front-line supply and an arrangement so that it could be used as an ambulance. The vehicle should be superior to the present ¼ ton and the ¾ ton because of its greater mobility and its narrow width. After the vehicle is developed, tested, and evaluated, then a new lighter jeep will probably be considered.

The most important class of wheeled vehicles being developed is the Cross-Country Carrier. The T51 is an example of this type. It is a 2½-ton, 6 wheeled, single tired, vehicle equipped with a 200 hp flat opposed air-cooled 8-cylinder engine mounted vertically. An interesting and important feature of this vehicle is that it has self-locking differentials which allow the power to be transmitted to the wheel or wheels having traction. The carrier also has a control in the cab to inflate or deflate the tires while in motion. It should be noted that the vehicle is not called a truck; it is strictly a combat zone cross-country carrier and at present not contemplated to replace the standard 6 x 6 in the rear areas.

A similiar cross-country carrier in the ¾ ton class is now being developed, designated the T53. It has 4 single tire wheels instead of the 6 wheels of the T51.

An important project is in progress now to test commercial type vehicles. It is anticipated that in the event of an emergency, there would be an immediate demand for much vehicular equipment. Since time and equipment would be items which would be in short supply, a survey is being made now to determine the commercial vehicles which would be suitable for military use with little or no modifications. The conversion of commercial vehicles to military use would be strictly a stopgap expedient until conversion of the automotive industry could be made to military types. On test now are the Willys commercial jeeps and 1 ton Dodge Powerwagons.

An important phase of the work at Board No. 2 is a project to improve maintenance procedures. Combat experience demonstrated the need for quick repair of damaged or inoperative combat as well as general purpose vehicles. Because of the lack of abundance of supply of major items, such as trucks and tanks, often the only source of army reserve was the vehicles recovered and repaired by maintenance units assigned to the Army. The maintenance of these vehicles is extremely costly in time and personnel because of complexity of design resulting from functional requirements and lim-

itations as to weight and size. Adequate consideration has not been given to the field maintenance problem in the design of military vehicles in the past. Therefore, there is a requirement for field maintenance that can be accomplished quickly under adverse conditions.

It is felt that next to fightability or utility in design of the military vehicles, its maintainability in the field must be considered. Accordingly, a section has been organized at the Board for systematic and thorough testing of miiltary vehicles from the mechanic's point of view in order that the down-time for maintenance may be reduced to the barest minimum. Testing is not confined to newly developed vehicles but includes vehicles which are already standard. The latter are tested to determine ease of maintenance principles and procedures in order that they may be applied to future vehicle design and not to the vehicles on hand.

The Ease of Maintenance Section has sought to reduce the Maintenance time by: (1) trying better methods and tools, (2) modifying vehicles to make them more accessible to mechanics, and (3) defining principles and requirements for new vehicles. To illustrate the extent that modification can improve maintenance time, let us take the ¼-ton jeep. The removal and replacement time of some units are as follows: (a) transmission and transfer case reduced from 2 hrs, 29 min to 35 min (b) steering gear reduced from 1 hr to 10 min (c) engine reduced from 1 hr, 18 min to 52 min. The new Light Tank will be an example of designing ease of maintenance into the tank at its inception.

The writing of military characteristics and testing of all engineer equipment in the type field army is the responsibility of Army Field Forces Board Number 2. This responsibility covers a wide range of equipment which is grouped for convenience of development into the following classes: (1) pioneer, (2) topographic, (3) bridging, (4) heavy equipment, and (5) special.

In the development of this equipment within the responsibility of the Engineer Section, constant effort is made to produce items which will have the greatest general use, may be airborne if possible without restricting the use for its primary purpose, will be easily operatable and maintainable, and will fill a requirement for the Field Forces.

The development of pioneer equipment is primarily devoted to such items as mines, mine detectors, mine eradicators, hand tools, and camouflage.

Development, now an Ordnance function, is pointed to improving our existing types of mines for interim use, and to entirely new types of mines that sometimes approach the fantastic. An attempt is being made to develop a family of mines that can be used singly or in a series against personnel or tanks.

The struggle between mines and mine detectors for ascendancy is still continuing. The nip and tuck battle that was waged between German developments and ours kept troops and scientists on both sides in continual frenzy. To cite examples of this vicious cycle, the first mines were metallic. Metallic mine detectors were developed which set up a magnetic field; the interruption of the field by a metallic mine indicated its presence. Then attachments were placed on the mine so that the magnetic field of the detector would set off the mine. This necessitated developing a new detector which would neutralize the effects of the attachment. When this problem was solved, the Nazis went to wooden, glass and finally plastic mines. The nonmetallic mines threw the detection phase in a tail spin again which required a renewed mobilization of effort, skill, and knowledge to overcome this temporary advantage gained by the enemy. Since the war, many improvements have been made in the detection of nonmetallic mines and also the portability of mine detectors. A foolproof mine detector is a great morale builder of combat troops which in turn improves their efficiency and aggressiveness.

There have been many attempts and a multitude of devices to eradicate mines. Some of the devices that appeared in the last war were the heavy rollers, flails, and snakes. All were effective to some degree but not wholly adequate. Improvements on such equipment are being made to give more positive results.

Experience during the last war clearly indicated the need for improvement in the topographic service of the field armies. Study and research have established certain general limitations which apply to all topographic equipment items. These limitations are as follows: (1) light weight and rugged construction, (2) special conditioning for both tropic and arctic operations, (3) light security in forward areas, (4) mobility, (5) air portability and air-drop characteristics where applicable.

A study program has been in progress and military characteristics have been prepared for a number of items of surveying, photomapping, map and photographic reproduction, and ground navigational equipment. Some items were confined to the correction of deficiencies of existing equipment, while others represent new developments which will require varying periods of time for full development and service testing before standardization. The following are some concrete examples:

A new line of survey equipment, such as transits and levels, is being built which will combine the best features of European types with that of the domestic type, thereby producing instruments which will have less weight, yet greater precision, strength, and durability.

Large capacity photo printing units of 50,000 prints a day are being studied to fill the requirements of a Field Army. The printing task has recently been assigned to the Field Armies in order that they may fill their own requirements from Air Force negatives.

Ground navigation aids are being developed along two lines; short range mechanical self-contained plotting units and longer range electronic position-indicating equipment. Examples of the short range devices are an improved vehicular odograph incorporating ad-

ditional correction devices and gyroscopic azimuth control, and the pedograph for dismounted troops. Long range equipment includes man-packed electronic equipment with probable range up to 25 miles, and similar vehicular mounted equipment with useful ranges extending beyond 200 miles.

In addition, recommendations have been submitted for the reorganization of topographic units normally assigned to field armies, and for revisions to engineer topographic sets of equipment.

In bridging equipment the emphasis is being placed on simpler, stronger, lighter bridges with more universal use and interchangeable component parts. Considerable headway is being made in attaining the objective. For example, the successor to the Bailey Bridge will weigh about 60% less for the equivalent length and load capacity.

For division use, we shall have a footbridge, infantry support bridge, a floating bridge and a one-way fixed bridge of 60-ton capacity. As many components as possible will be interchangeable. For example, the decking of the fixed bridge will be used for flooring on the floating bridge. The net result will be that bridge equipment will require a minimum of transportation, less time to erect and will be usable to the maximum extent regardless of the type of bridge required. Components of the one-way 60-ton fixed pier bridge will be usable in the Army 100-ton. The aim in the bridging program is to keep ahead of the vehicle loads. Whereas, in the last war bridges were either too narrow or too light, the new division bridge will be wide and heavy enough to take any contemplated vehicle used in the division area.

Every effort is being made to reduce erection time. Cranes and other devices are being developed to erect and launch bridges quickly and mechanically. Related to this approach are vehicular mounted bridges possibly transported and launched from armored vehicles.

Following are some heavy items of engineer heavy equipment that the Board is connected with: tractors, scrapers, graders, powered loaders, excavators, concrete mixers, soil stabilizers, compressors, fire-fighting vehicles, power and lighting equipment, snowplows, distillation units, and insect sprayers.

The main field of the Special Equipment Sub-Section is the Field Forces engineer equipment for the Airborne Engineers and the Engineer Special Brigade. Tables of Organization and Equipment are under study to evaluate combat lessons and to keep equipment types up to date with the developing missions of Airborne and Amphibious units.

An item currently under test for underwater reconnaissance, beach obstacle clearance, and salvage is a self-contained diving suit. With this unit, a man is able to work in waters 30 feet deep for as long as two hours which is a vast improvement over the plain face mask used previously. However, it should be pointed out that more elaborate equipment is available to work throughout the full range of underwater depths.

Developments in medical equipment reflect the same characteristics as in other fields, that is, less weight and bulk and more efficiency. Policy is guided on a purely functional basis which has resulted in the development of two sets of equipment: (1) that which is required for actual combat, and (2) that which is required for rest and training areas.

For example the cumbersome, heavy Battalion Aid Station Medical Chest has been replaced with a chest that can be carried by one man. The components of the chest have been reviewed and accepted by joint representatives from the Army, Navy, Marine Corps and Air Force. Many of the old items were eliminated and useful new items recently developed have been added. Those who had the misfortune of being litter-bearers may be heartened by the development of a new lightweight litter which is six pounds lighter than the old type. Some sacrifice in durability had to be made, but the gain in comfort, and savings in energy by the carrier are more than compensating.

Continuing projects include improved lighting for medical field installations, functionally designed and packaged medical and dental kits for aid men, revision of field dental equipment, lightweight folding splints, and improved field housing for medical installations.

Army Field Forces Board Number 2, through its contact with industry, the service schools and technical services, and through its studies of battle reports and foreign developments, is seeking to remain abreast of the general situation in the world in order to be progressive and visionary with stability.

Hence in the development of equipment for the Field Forces, within the responsibility of this Board, certain factors must be met or at least considered.

(1) Does the equipment fill a requirement?

(2) Is it sufficiently simple in design and construction to be mass produced without excessive expenditure of time, men, and materials?

(3) Does it have dependable performance?

(4) Does it have universal use to limit the number of special types?

(5) Can the equipment be used with limited technical skill and training?

(6) Is the construction such that maintenance can be performed with a minimum of time and effort?

(7) Is the equipment overdesigned to outlast its life expectancy under combat conditions?

(8) Does the size and/or weight allow it to be airborne?

(9) Are parts within the same family of equipment interchangeable?

(10) Does it do the job?

(11) Can the same be done with less?

The era of small boards contending with individual branch or service requirements is forever gone. Time, money, and materials are now needed in such vast amounts that a coordinated program of development and requirements is mandatory if we are not to deplete our strength before we can apply it at the critical point.

EDITORIALS

New Editor

WITH this issue of the ARMORED CAVALRY JOURNAL, the present Editor cleans off the top of the Editorial Desk, packs a bag and retires from active service August 31st. Ever since 1942 we have wielded the editorial pencil and it is not without a bit of nostalgic regret that the time has come when we must retire from active duty. During our regime as Editor we have seen many changes occur in the JOURNAL. Some of them may have seemed somewhat radical at times but we have always believed that the JOURNAL must keep up with the changes and ideas as they are accepted by our military establishment. The splendid cooperation and indulgence in our efforts by our readers has been greatly appreciated and is proof enough of their acceptance of our editorial policies.

To our staff go our sincere thanks and appreciation for the efficient, capable and loyal manner in which they have managed the administrative, editorial and sales departments. To Captain William G. Bell, Associate Editor, whose wholehearted support and interest in the magazine have been responsible for many new and excellent ideas in format and production; and to Natica A. Brown, Business Manager, whose keen business acumen and untiring efforts and devotion to our Book Department and financial section have steadily increased our business, must be given particular commendation. Miss Brown left this month for a well earned vacation. She plans to travel in the United States and will eventually make her home in Honolulu. I am sure that the staff and Executive Council join me in wishing her "Bon Voyage" and "Aloha."

Following the publication of this issue, Colonel Wesley W. Yale will occupy the Editorial chair. To most of our readers, Colonel Yale needs no introduction. A former Cavalryman, with long experience in command and school duty, he served the greater period of the war in the 11th Armored Division as Chief of Staff and in command of Combat Command "B" in Europe. He recently returned from Paris where he was Chief of the Office of Foreign Liquidation Commission. His diverse military experience will make him a valuable asset in the governing of the affairs of the ARMORED CAVALRY JOURNAL. We turn over the Editorship to Colonel Yale with our wish for a successful and interesting tour of duty with the ARMORED CAVALRY JOURNAL.

Language Training

Our excellent continental position of the past, in which we have found ourselves conveniently flanked by broad oceans and bordered by friendly nations, has had the coincident effect of protecting us well from other countries and peoples, and, consequently, from their languages. We have remained substantially within the confines of the English language. Perhaps prior to World War II we could ride along on linguistic isolationism. Certainly today we cannot.

Europeans are well ahead of us in the ability to speak languages other than their own. The recent war has strongly indicated the need for language consciousness in our country. In particular this applies to the military. The war revealed our inadequacy. The peace is exposing our shortcomings to a further extent as a world-wide commitment goes on.

Obviously much can and will be done in our schools and colleges. General Jacob L. Devers, Chief of Army Field Forces, has recently stressed the importance of training college and university students in the basic fundamentals of foreign languages as a vital requirement for national security.

General Devers also pointed out that a working knowledge of foreign languages is essential so that American troops would be able to deal intelligently with personnel of foreign allies, as well as in the questioning of prisoners of war of a foreign foe and in relations with enemy civilian nationals when enemy territory is occupied.

A knowledge of language will effect an economy of personnel and will open the door to an understanding between our people and those with whom they come in contact. However, along with the meeting of future needs through our schools and colleges, there is a basic existing need to be met. The personnel now on duty should be in the process of achieving language goals attendant to present assignments. The Army Language Schools and other related unit efforts are a partial answer, but much of the burden rests with the individual.

We feel that we can in some measure provide an assist in the language line through the new service we begin in this issue of the JOURNAL. Your attention is directed to the inside front cover. We solicit your serious consideration and urge your positive action. This is an opportunity for furthering your career; one to increase your value to the service and to broaden you as an individual and a citizen. The method is established. The expense and effort are negligible; they are stepping-stones to a worthwhile result.

Correction

In our last issue we carried an editorial covering the change of command at The Armored Center, with portraits of General Leonard, the departing Commander, and General Livesay, his successor. Unfortunately, these photo cuts became reversed during the preparation of the page for the press run—and after the approval of a correct final page proof. We wish to apologize for the error, and we hope that everyone received it as graciously as did General Livesay, who responded to our letter with the generous comment that those who knew either General Leonard or himself would recognize it as a quite human error: to those who knew neither one it would make little difference.

MERGER DISCUSSION GOES ON

The discussion of the question of merging the various Journals of the Ground Arms has progressed to a considerable degree since our last issue.

The staff of the ARMORED CAVALRY JOURNAL and the President of the Association feel that in principle the merger idea represents a great step forward; the resulting publication should be a monthly professional magazine, strictly nonpartisan in character and having access to an author field hitherto denied the individual periodicals.

A poll of ARMORED CAVALRY JOURNAL readers and subscribers at Fort Knox, made without any attempt to influence the result, discloses that 80% agree with our views.

In order to carry out these views, the representatives of the Association believe that not only should we conditionally agree to, but lend our efforts towards a merger of the ground forces magazines; *insisting only on the proviso that the nonpartisan and professional character of the new association and magazine be preserved through action of an Executive Council;* this Council being composed of a representative from each Branch, and with a President elected by the Council from outside their own ranks.

Preliminary discussions with representatives of the Field Artillery and Coast Artillery Associations have indicated their strong endorsement of this effort to unify the Ground Forces Branches through merger, providing that the above conditions are met. Unfortunately, complete agreement with the Infantry has not yet been reached.

There is a rising sentiment for a merger of the two artillery journals with the ARMORED CAVALRY JOURNAL in the event that an association of all four ground forces proves impracticable. The Editor would appreciate hearing the views of the readers on this latest proposition.

No final decisions will be made without balloting all Association members.

SUBSCRIPTIONS AND THE MERGER RUMORS.

Do not allow rumors of a possible merger of Ground Forces magazines to influence you in the renewal of your subscription to the ARMORED CAVALRY JOURNAL.

No merger can be effected without the consent of a majority of the members of the Armored Cavalry Association. In the event that a merger is carried out, our subscribers will be fully protected either by a proportional return of the subscription price, or by applying their credit towards a subscription for the new magazine.

Under the most favorable conditions, and granting that all points at issue can be met, it will take several months to poll readers of the different magazines and to effect the legal steps incident to forming a new association.

The Selective Service Act And The Expansion Of The Army

The enactment of the Selective Service Act has made possible the organization of an effective striking force. Existing units will be filled out in strength, and new units will be going into operation. Here are the units that will fit the program.

TRAINING UNITS NOW IN OPERATION

4th Infantry Division, Fort Ord, California
5th Infantry Division, Fort Jackson, South Carolina
9th Infantry Division, Fort Dix, New Jersey
3rd Armored Division, Fort Knox, Kentucky

NEW TRAINING UNITS

5th Armored Division, Camp Chaffee, Arkansas
10th Infantry (Mountain) Division, Fort Riley, Kansas
17th Airborne Division, Camp Pickett, Virginia
101st Airborne Division, Camp Breckenridge, Kentucky

TACTICAL UNITS

2nd Armored Division, Camp Hood, Texas
2nd Infantry Division, Fort Lewis, Washington
3rd Infantry Division, Fort Benning, Georgia
8th Infantry Division, Camp Campbell, Kentucky
(Less one Combat Team, Fort Devens, Mass.)
82nd Airborne Division, Fort Bragg, North Carolina
Airborne Division (Unidentified) Camp Atterbury, Indiana
A Light Cavalry Regiment, Fort Devens, Massachusetts

Additional service and supporting troops at Fort Bliss, Texas, Camp Carson, Colorado, Fort Meade, Maryland, Camp Cooke, California and Fort Worden, Washington.

NATIONAL GUARD UNITS IN THE PROGRAM

49th Armored Division, Texas
26th Infantry Division, Massachusetts
28th Infantry Division, Pennsylvania
31st Infantry Division, Alabama and Mississippi
43rd Infantry Division, Connecticut, Vermont and Rhode Island
45th Infantry Division, Oklahoma

The armored divisions mentioned above, with their commanders, are as follows:

2nd Armored Division, Camp Hood, Texas, Major General James G. Christiansen.
3rd Armored Division (Training), Fort Knox, Kentucky, Major General Roderick R. Allen
5th Armored Division (Training), Camp Chaffee, Arkansas, Major General Robert S. Beightler
49th Armored Division (National Guard), Texas, Major General Albert Sidney Johnson

The Assistant Commandant of The Armored School gives us the high points which form the basis and guide for Armor employment. "There is no place for the words *always* and *never*."

THE PRINCIPLES OF THE EMPLOYMENT OF ARMOR

*by Brigadier General Bruce C. Clarke**

Introduction

THE last ten years have seen great changes in the art of warfare. Air power has profoundly changed our military concepts, but it has not eliminated the need for ground forces. Rather, it has served to weld more closely together the several armed services into an overall, balanced national defense team wherein each service aids and is in turn aided by the others in accomplishing a common mission.

On the ground, we have seen more open and fluid warfare, faster movements, more dispersion, more elastic defense formations, and the ability to concentrate great power at a particular point, thereby making the penetration a more commonly used maneuver. Armor has been responsible for much of this change. We have witnessed the employment of armored divisions, armored corps, and armored armies. The new type field army of the American Army is virtually an armored army. It has approximately 3500 tanks plus much self-propelled artillery.

The ability to produce the mechanical means of warfare and to employ those means is an outstanding asset of the United States. We must develop and use this asset to offset the advantage of more manpower possessed by our possible opponents. The use of armor is in furtherance of that concept. It is also in furtherance of our efforts to reduce casualties on the battlefield.

Armor is the arm of mobility, armor-protected fire power, and decisive shock action. Armor is a vital and regular member in the ground team. Armor brings within reach of the field army commander decisive objectives. It provides on the modern battlefield the means by which the army commander can achieve the ultimate objective—destruction of the enemy's will to fight.

There are certain basic principles which govern the employment of armor—but they are no more than guides. As in the rules of bridge, there is no place in the principles of employment of armor for the words *always* and *never*. The successful application of the principles of armored employment is entirely dependent upon commanders and staffs being flexible in mind, progressive in thought, and liberal in imagination.

Armor Plays the Historic Cavalry Role

Armor fulfills the role in modern warfare that Napoleonic cavalry fulfilled in the 19th Century. It combines great mobility with overwhelming fire power. Cavalry of the later 19th Century and the 20th Century relied primarily on mobility. The fire power of armor must not be overlooked in a consideration of its characteristic of mobility.

For many years armies have sought light, fast-moving units that could upset the time-space factors of the opponents. They were willing to sacrifice some power in order to attain the mobility desired. The cavalry was developed into such a force. With the wide use of the automatic small arms and other effective weapons, and of automotive vehicles, the horse no longer was an effective weapon or an efficient means of transportation on the battlefield. Armor, which combines both high mobility and great fire power, has assumed the historic cavalry role in modern war.

Armor Is a Strategic and Tactical Threat

Armor is a strategic and tactical weapon. Not only is the presence of armor locally a threat to any force, but its capabilities of long movements and prompt commitment make the presence of distant armored units a threat to any operation.

Armor Uses Its Mobility

Armor has been described as "mobile, armor-protected fire power." Armor gains its ends through its ability to move and shoot, but above all, to move. An armored formation many miles away has the ability to intercede in a battle in from 10 to 20 per cent less time than a formation geared to the foot soldier. Armor moves in a fighting formation. To its speed of movement, then, must be added its ability to be committed promptly from march formation. Mobility in armor is derived not only from tanks, armored personnel carriers, and self-propelled artillery, but also from the extensive organization of mobile service support at all echelons from company to division.

Armor Uses its Fire Power to Close With the Enemy

Armor concentrates its power at the decisive point of action. Armored formations contain an overwhelming superiority of armor-protected machine guns and cannon. The tank cannon is essentially a weapon used

*General Clarke's photo and biographical sketch appear on page 9.

against enemy tanks. It is not artillery. In the application of armor's fire and shock power, artillery and other supporting weapons provide the covering fires which enable the tank machine guns and armored infantry to close with and destroy the enemy.

Armor In Strength Produces Decisive Shock Effect

The shock or psychological effect which comes to troops on the receiving end of a massed armored assault is terrific. This effect radiates from the point of attack in concentric semicircles as do the waves from a stone dropped in the water near the edge of a millpond. If the attack is in strength, these shock waves reach to the enemy division, corps, and army headquarters. Shock effect gives armor part of its protection and hastens the disintegration of the enemy force attacked. The shock effect of the mass employment of armor varies as the square or cube of the number of tanks used. Attacking with armored strength too small to produce decisive shock effect often results in great losses and inconclusive results.

Armored Formations Must Be Flexible

It is not given to many to be able to visualize all that can happen during a full day of armored action. Unforeseen contingencies occur. Situations as to terrain, weather, footing, obstacles, and enemy cannot be accurately predicted far into the future. A set formation for all situations is a dangerous oversimplification in armored tactics. The armored division is designed to fight in two flexibly organized combat commands. Each is composed from time to time to perform most advantageously the job at hand. Each is commanded by a general officer who has a staff adequate for handling operations in fast-moving situations and trained to work under mission-type fragmentary orders.

Armor Is a Thrusting Weapon

Armor is a weapon which should be thrust quickly through enemy opposition on a relatively narrow front. It is strong as long as it remains in depth. It should not fan out until the opposition has been reduced and powerful enemy counterreaction is no longer probable.

Armor Stays In Column for Strength

This does not mean that it necessarily moves on a narrow front or on only one road. It may advance on a broad front, but so long as the tactical formations of the division and combat commands are in column, the commanders are ready for any contingency and prompt action can be taken without waiting for higher staff reaction and direction. Breaking through and out of an enemy defensive zone in a column of combat commands gives as much or even more effective power in the break-through, and at the same time saves an uncommitted tactical command to handle contingencies and to push on promptly in exploitation. Armor formations are organized in anticipation of success.

Armor Drives Deep, Assembles, and Destroys

An armored unit commander must observe the principle of the objective. An engineer who wishes to blow down the face of a rock wall bores deep, assembles his charge, and blasts back. He does not place his charge on the face of the wall. Armored action is similar. What protects armor during this process? The answer is speed, mobility, flexibility, enemy command and staff inertia, and the time and space factors which control the ability to react to such a force. The shock effect of armor reaches even to commanders and staffs and adds to the inertia and the time it takes to react.

Armor Needs Mission-Type Orders

Armor should be given a mission and the minimum essential restraining and coordinating directions. It should be given the ultimate and decisive objective of the next higher commander so it can take prompt advantage of breaks in order to make great gains.

Armored Action Calls for Combined Arms Teamwork In Lower Echelons

Armored formations contain, in intimate association, tank, infantry, engineer, and artillery elements. This may, and often does, extend down to the company level, where the tank company may have infantry and engineers as well as the ever-present artillery forward observers. Such a situation on the battalion level is usual. It should not be assumed that the tank unit commander is always in command. Often the armored infantry unit is the basic force to which tanks and engineers are attached, and artillery closely supports.

Once the Momentum of a Armored Attack is Attained It Should Be Allowed to Run Its Course

An armored division has enormous momentum when it gets rolling. To dampen this by phase lines, limited objectives, and other factors that require high-level decisions in order to continue to advance, dissipates that momentum—often faster than does the enemy. Any restriction on movement may provide the enemy with time to react and will frequently result in loss of the initiative.

Successful Armored Action Is Characterized By Deliberate Planning Followed By Violent Execution

Armored action involves large road space, close timing, elaborate supply plans, and extensive plans for maintenance. It involves careful coordination and teamwork with all arms. Artillery, mortar, and air support must be tied in. Communications must be coordinated and perfectly established. To do all these requires thorough and deliberate planning.

Once the planning is done, the execution is the payoff. It must be violent if the mobility, fire power, and

shock effect desired are to be attained. Halfhearted execution is fatal to the results expected from armored action.

Armored Action Requires Supply and Maintenance

Adequate plans and facilities for supply and maintenance are essential. It takes about 1000 gallons of fuel to move an armored division a mile. An armored unit out of fuel is easily destroyed. Fire power means consumption of large quantities of ammunition. Food is necessary. In the typical armored action, supply routes may be cut by enemy action for several days. These contingencies must be foreseen and means provided to assure success. The combat command should carry with it the supplies necessary to reach the final objective and hold effectively.

Tanks and other armored vehicles require frequent and complicated maintenance. The means are available in the armored division; the time must be provided if a favorable balance of combat vehicles is to be kept in action against the enemy for sustained operations. The rotation of combat units through the reserve command and the infrequent employment of the reserve command as a combat command will provide the necessary time for maintenance.

Armored Defensive Action Is Elastic

Armor can conduct and has conducted very effective defenses. It does this by being elastic, by rolling with the punches, by counterattacks, and by anticipatory thrusts to upset an enemy attack forming up. It does not establish a brittle line. It disposes itself in considerable depth. While defense has not been the role normally associated with armor, its capabilities on defense in future warfare must not be overlooked.

Armor and Tactical Air Are Partners

It is literally true that armor and tactical air when working close together form a team with enormous power. This partnership does not happen by chance. It takes close association, careful air-ground training, and an intimate understanding of each other's capabilities, limitations, and methods to attain the desired relationship. Armor is the one that needs the support. It must go far more than halfway, if necessary, to effect the partnership.

An Analogy of Modern Football To Armored Action

The accompanying diagram of a modern football play executed from T formation well illustrates a typical action of a corps of two or more infantry and one or more armored divisions. The infantry divisions are the line; the armored divisions the backfield. Let us now note the many principles of armored action which are well illustrated:

a. Before the point of attack is disclosed there is a threat all along the line.

b. There is deception.

c. Teamwork is highly developed.

d. The support is carefully organized.

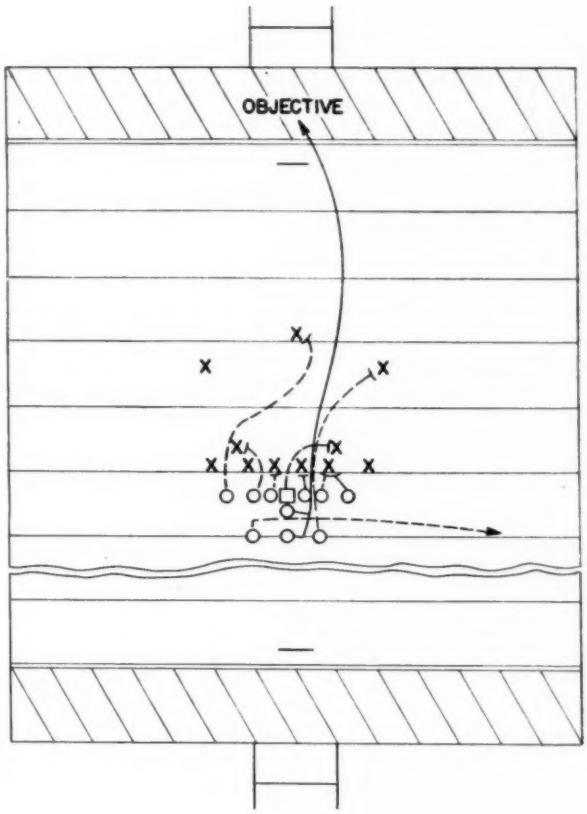
e. The ultimate objective is known and is decisive.

f. The attack thrusts quickly through the defense line on a narrow front.

g. The attack goes through the defensive line in column for power and for flexibility to take care of contingencies.

h. The attack drives deep. It does not mop up those that are by-passed.

i. The defense is disposed in depth, is elastic, and is highly mobile.

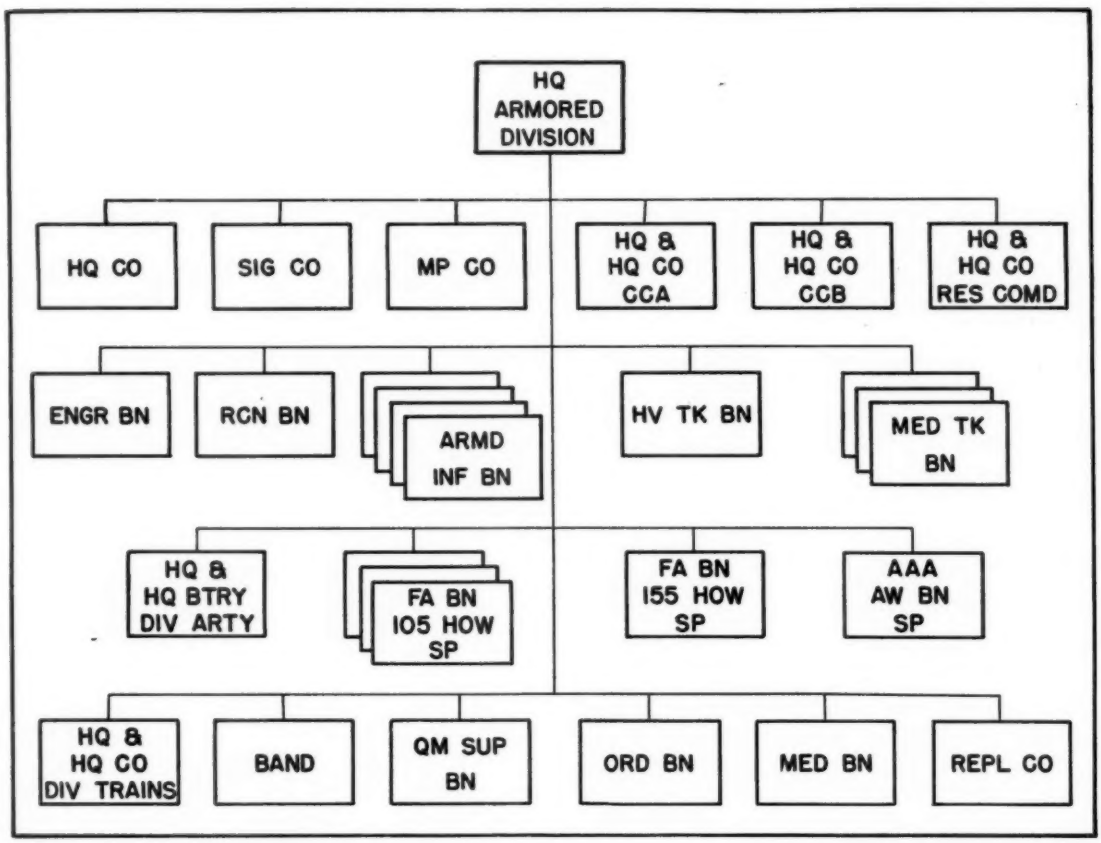


Conclusion

The proper application of the principles of the employment of armor will produce outstanding results. They should be considered not as rules, but as guides after carefully estimating the situation. Deliberate planning is needed. Violent execution then pays the dividends. Flexibility of mind, concept, and formations is required of an armored commander and his staff. He must be willing to take coldly calculated risks. When he holds the cards he must back them up with all his chips, and often he must be willing to put in all his chips when he is not sure that he holds the winning hand.

THE ARMORED TEAM

Today's Armored Cavalry unit is the complete refinement of the Ground Forces Team. Within the parent Armored Cavalry Branch there is the ultimate in teamwork among the combat arms and the services—unification in spirit and in fact. This fine balance in arms and services is illustrated in the chart below and is discussed in the articles immediately following.



ARMOR IN THE TEAM

by Lieutenant Colonel Creighton W. Abrams

Teamwork is a positive and tangible result of a blending of forces, each in its proper proportion, each exploiting its outstanding capabilities and complementing the limitations of others to produce a concerted effort toward the achievement of the ultimate objective.

DURING World War II, the ground army operating jointly with the Tactical Air Force in a series of brilliant campaigns destroyed one of the best trained and equipped armies the world has yet produced. This success was achieved despite the far greater battle experience of the German Army, their development and exclusive operational use of large rockets, their operational use of jet-aircraft, and the widely accepted superiority of their armored equipment, notably tanks. Postwar writing and discussion have not entirely clarified the apparent contradiction between results and the superiority of German arms. In fact, so much has been written and widely publicized about the mistakes in leadership, the errors in procurement, and the inferiority of equipment that—victory the fact—appears to be —victory by "luck."

World War II was not won by "luck." While mistakes were made and much can be learned through examination of past errors, there is a wider field for learning through study of the principles, the factors and the techniques which contributed to the decisive victory by American arms in World War II. Many factors have contributed to the success of American arms, but the greatest of all is the fundamental principle of teamwork. Teamwork is a positive and tangible result of a blending of forces, each in its proper proportion, each exploiting its outstanding capabilities and complementing the limitations of others to produce a concerted effort toward the achievement of the ultimate objective.

The necessity for teamwork is understood by all from the veteran rifleman, who knows what tanks and artillery can do when they all work together, right up to the top where Army, Navy, and Air have been joined to achieve a concerted effort. In World War I, the ground combat team consisted principally of infantry, engineers, and artillery. World War II added one other member to this team—armor.

The objectives of the field armies of World War II were seized by a combat team of infantry, armor, engineers, and artillery supported by a proper balance of service units. Tanks became essential to the successful operation of infantry divisions. Mechanized cavalry units as economy forces filled the great gaps in mobile operations providing security and reconnaissance for the major elements. In Africa and Europe, the armored division became a full member of the ground team, placing in the hands of the field commander the means for rapid seizure and holding of decisive objectives of great tactical, and often strategic, importance.

In the ground team, armor is the arm of mobility, armor-protected fire power, and decisive shock action. Mobility in armor is attained not only through the wide use of tanks, full-tracked personnel carriers, and self-propelled artillery, but also through the extensive organization of mobile service support at all echelons of command. The extensive use of radio communication supports mobility and permits effective command control in the most fluid operations. The separate battalion type of organization permits the greatest flexibility and latitude in the commitment and control of armored units in a war of movement. Mobility permits the rapid concentration of fire power at the decisive point of action. The characteristic of "armor-protected fire power" permits the maneuver of armor under fire of machine guns, mortars, and artillery and the effective return fire of crews within the armored vehicles. Mobility and fire power produce shock action. Shock action is a psychological effect achieved upon the mind of the enemy soldier or leader when fear or apprehension replaces judgment and common sense. Armored action achieves this to a decisive degree as shock action travels with an ever-broadening effect from the front-line enemy soldier to his division, corps, and army commanders.

An understanding of the characteristics of armor is only the foreword to the employment of armor. The successful application of the principle of teamwork to the employment of armor in the ground team requires the assignment of objectives and missions which will utilize to the maximum the distinguishing characteristics of armor. This applies with equal importance to tank units organic or attached to infantry divisions, the armored cavalry regiment (light), and the armored division.

In the infantry division, tank units are provided to

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support the rifleman in the accomplishment of his mission in both offensive and defensive operations. The word "support" does not imply a position to the rear or defilade within the division zone of action. Nor does support imply the availability of a tank or tank section to each small group of riflemen in the division. Tanks, organic or attached to the infantry division, should be employed at the decisive point of action in the greatest numbers possible. The mobility of tank units will permit rapid concentration at the decisive point of action. The plaintive wail of the indecisive and unimaginative who fancy, like the ostrich with his head in the ground, some security by equal distribution of strength throughout the depth and breadth of the division zone, must be ruthlessly resisted. If tanks are to make the contribution in the infantry division of which they are capable, then they must be employed to take maximum advantage of mobility, armor-protected fire power, and decisive shock action. This means in many cases preserving the tactical integrity of the tank company and tank battalion and providing for it the necessary infantry, engineer, and artillery support.

The armored cavalry regiment (light) is another armored formation differing somewhat in equipment and organization from the tank battalion or the armored division. The armored cavalry regiment (light) is the most mobile of armored units. It lacks the heavy gun fire power of tanks or the armored division. The self-contained organization of its platoons, companies, and battalions and the extensive use of radio communication make it admirably suited for deployment over broad frontages as a security force to permit the concentration of other forces at the decisive point of action.

The armored division is the largest armored formation. It is in itself a force of combined arms. The armored division provides the corps or army commander with the means to seize rapidly and hold distant and decisive objectives. In defense, it provides depth to the corps and army sector and the most effective means of countering penetrations of the defensive organization.

The armored division is a decisive weapon. It is assigned the ultimate objective of the next higher commander. The opportunity for the employment of the armored division in offensive operations is frequently created by infantry divisions. This technique results in overcoming initial obstacles to secure terrain from which the launching of the armored attack will permit the use of armor's mobility and fire power.

The minimum controls are placed upon the operations of the armored division. Phase lines, intermediate objectives, and boundaries restrict the mobility of armor. Armored action is fast moving, and unnecessary controls only cause delay and jeopardize the successful accomplishment of the corps mission.

The armored division should be given and should use mission type orders. It is unrealistic for the corps commander to assume that he can visualize the circumstances in which the armored division will find itself three days hence and one hundred miles behind the enemy lines. It is even more unrealistic for him to visualize that he will be on the spot at the time to make appropriate decisions. The greatest possible latitude should be permitted the armored division commander in the movement, formation, and disposition he makes to accomplish his mission. Only then will the mobility and flexibility of armor be fully utilized.

The armored division in conjunction with Tactical Air is the principal means available for the destruction of large enemy armored formations. Therefore, a realistic view should be taken in the conduct of the defense. A line of defense as such has no strength. Strength in defense comes in depth which permits maneuver of forces not engaged to create a favorable balance of forces at the point of penetration. Depth should be considered in terms of miles and not in yards. The armored division should not be employed in the line for the primary purpose of making a continuous line. The most effective use of the division in the corps and army team is its employment in a position in depth where it can maneuver properly for the purpose of destroying penetrations.

The armored division is a teammate of Tactical Air. The flexibility of formation and the ability to concentrate effective power and influence over wide sections of the battle zone are similar. The teaming of these two forces deep in the enemy's rear achieves the maximum in destruction of matériel and the enemy's will to fight.

Finally, there is one weapon more effective than any arm or service or equipment: the weapon upon which the future of the army depends—TEAMWORK! Teamwork motivated by flexibility of mind and progressiveness in thought—teamwork that will cut across boundaries of jealousy and prejudice without permission—teamwork that does not recognize rigidity in unit organization—teamwork inspired by objective and selfless leadership.

LEARN A LANGUAGE! -

At least one language in addition to your own is essential in our modern army. Service today brings us into contact with many peoples in many parts of the world. The opportunity to learn a language is easily available at small cost in money and effort.

- SEE THE INSIDE FRONT COVER

Modern Armored Cavalry Organization

by Lieutenant Colonels James I. King and Melvin A. Goers

The characteristics of Armored Cavalry—mobility, protected fire power, shock—are represented in our new Armored Cavalry organizations—The Armored Division: The Armored Cavalry Regiment (Light): The separate Tank Group: The Amphibious Tank Battalion. Here is how they fit the picture of our modern Army.

MILITARY operations in World War II conclusively demonstrated that success in combat can only be accomplished by a well-balanced team. Each member of that team must assist other members, and in turn be assisted in order to accomplish a common objective. Armor is a part of the army team providing the army and corps commanders with a decisive tool to influence the course of battle.

Military organizations are established to accomplish definite missions. The materials available for the construction of an army troop unit are, to put it simply, men, weapons and vehicles. However, the military architects must provide these materials in the proper ratio so as to incorporate control, destructive fire power and mobility within the unit.

The main characteristics of modern armor are mobility, protected fire power, and shock action. These characteristics were present at the time armored formations were introduced on the battlefield in World War I. The tank of that day was conceived to break the stalemate of trench warfare and overcome the superiority of the machine gun.

During the years between World Wars I and II progress in mechanization proceeded at an exceedingly slow pace. For example, as late as 1938, the Chief of Cavalry wrote in a memorandum to the Chief of Staff: "It (Mechanized Cavalry) has not yet reached a position in which it can be relied upon to displace horse cavalry. For a considerable period of time it is bound to play an important but minor role while the horse cavalry plays the major role so far as our country is concerned. I feel that the psychology of the public as well as that of important key men in our legislative branches and men in the army itself has mistakenly become unfavorable to the horse. We must not be misled to our own detriment to assume that the untried machine can displace the proved and tried horse."

The world had not long to wait for the battle trial of the machine. The German army gave a tremendous demonstration of the capabilities of the service team heavily supported by armor in the early days of World War II.

The German successes produced the cause, and the effect was the establishment of the Armored Force in July 1940.

The Armored Force was first organized along lines tested in combat by the German army. As one military historian describes it, "The Germans used the time-honored principles of aerial and ground reconnaissance, artillery and dive-bombing 'softening-up', clearance of obstacles by the engineers, a swiftly rushing mass of maneuvering tanks to a weak spot in the enemy's line or enveloping the flanks, the destruction of the enemy's vital rear installations by the armored vehicles, and the infantry cleanup. Superior power at a decisive point was the key to their success. This is a compressed summary of their tactics and cannot do justice to the detailed refinements applied to meet varying opposition and terrain." Speed, surprise, teamwork, and resultant confusion created were the essence. American armor was developed along these lines and acquitted itself with distinction in combat.

The present-day major armored formations are: The Armored Division; The Armored Cavalry Regiment (light); the separate Tank Group; and the Amphibious Tank Battalion. However, armored units have

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Lieutenant Colonel Melvin A. Goers is a graduate of the University of Illinois, Class of '40. He received a Reserve Commission and entered upon active duty in August of 1940, receiving his Regular Army commission in 1942. He served in the ETO during the war and is a graduate of the Command and General Staff College. He is at present Assistant G-3, The Armored Center.

been formally adopted by the Infantry Division, in that a Heavy Tank Battalion and a Reconnaissance Company are organic to each Infantry Division, and one Heavy Tank Company is organic to each Infantry Regiment of the division. Where the Airborne Division is concerned, it is proposed that in the event of a requirement of sustained ground combat this division will be augmented by the attachment of a Heavy Tank Battalion, a Reconnaissance Company, and the necessary service support. Worthy of note is the possibility of development of an air transportable armored formation.

Just what is the physical make-up of the Armored Units?

The organization of the Armored Division is hinged upon its main role, which is to conduct highly offensive warfare. It is composed of self-contained units of the required arms and services. It is the basic large armored unit of combined arms.

Through the various stages of its career the authorized tables of organization strength varied as lessons were learned in combat. A tabulation brings these changes out clearly:

Date	*Authorized T/O Strength*
15 July 1940	9,859
15 July 1941	14,771
15 Sept. 1943	10,933
Present	15,830

Intensive studies of combat actions of Armored Divisions were conducted following the conclusion of World War II. As a result of these studies it was apparent that certain changes were necessary in the structure of the Armored Division and in the ratio of the various arms assigned. These changes were designed primarily to increase the combat effectiveness of the division and to bolster the available service support.

The structure of the Armored Division (see lead page) bears a striking resemblance to the first American armored division organized in 1940, which consisted of five main elements or echelons, namely: a command echelon, a reconnaissance echelon, a striking echelon, a support echelon, and a service echelon. The composition of these five echelons has changed as combat experience was gained, but the basic concept has survived throughout.

The Armored Division is organized to provide flexibility in the formation of combined arms teams; this flexibility is provided by the Combat Command and separate battalion organization. The Combat Command is a tactical headquarters commanded by a brigadier general to which combat troops are attached by the division commander to perform a particular mission. Tanks, Infantry, Artillery, Engineers, and Reconnaissance elements are assigned in the ratio which best fits the mission. Added to these combat elements is the essential service assistance from the Maintenance Battalion, the Medical Battalion, and similar units, to support the Combat Command. In addition the Division Signal Company provides: radio vehicles and personnel to establish air request nets; specialized teams for radio repair; and, in certain circumstances, other personnel and equipment, such as wire teams, in support of the Combat Command.

In addition to the two Combat Command Headquarters and Headquarters Companies, a Reserve Command Headquarters and Headquarters Company is provided, organized in the same manner as the Combat Commands, but commanded by a Colonel. Here the similarity ends, since the considered primary mission of the Reserve Command is that of command and control of the combat elements of the division not attached to combat commands, and the rehabilitation of units withdrawn from combat. The Reserve Command has, however, the full capability of being employed as a Combat Command when necessary to employ the reserve. Here is a major structural change, since in the World War II Armored Division, the Reserve Command had insufficient assigned personnel and equipment to enable it to function as a tactical headquarters when required.

Looking at the tank units of the division, we find that a Heavy Tank Battalion has been added. At first glance the remainder of the tank strength seems unchanged. Upon a more detailed investigation of the Tables of Organization it is determined that each Medium Tank Battalion now has four Medium Tank Companies instead of three Medium Companies and one Light Company. Therefore the Medium Tank strength has been increased from 168 to 216, or percentagewise, an increase of approximately 30 per cent in medium tanks. In comparison, the Heavy Tank Battalion is composed of three tank companies; however, each company has four platoons instead of three platoons as found in the Medium Tank Company, for a total of 63 heavy tanks. Putting this all together it is noted that 111 tanks of the medium and heavy class have been added, with a loss of some 43 light tanks within the tank units.

The Heavy Tank Battalion is capable of performing all the missions assigned to the Medium Battalion; however, this battalion is characterized by great penetrating fire power with slightly less maneuverability and cross-country mobility than the Medium Tank Battalion.

The "Queen of Battles" is represented in this team of combined arms, in the form of Armored Infantry. Armored Commanders have continuously asked for more infantry to support the tank units in combat. Their call has been heeded, and the Armored Division will have four Armored Infantry Battalions, with four rifle companies each, as compared with the World War II organization of three infantry battalions of three companies each. The ratio of infantry to tanks in the Armored Division has varied as armor came of age. For example, in the Armored Division of 1942, there were 6 battalions of tanks and three battalions of infantry. In 1943 the proportion of tank battalions to infantry battalions was equalized. This ratio has been

maintained in the division organization.

Moving to the Artillery organization, this division has an organic Division Artillery Headquarters and Headquarters Battery; three battalions of 105mm Howitzers each of three batteries of six guns; one battalion of 155mm Howitzers against three batteries of six guns; and one antiaircraft automatic weapons four-battery battalion. All are self-propelled. The 155mm Battalion and the Antiaircraft Battalion are the new organic faces in this organization. It is noted that the added 155mm Battalion will give increased depth to combat, and is a powerful organic support weapon available to the division. The Antiaircraft Battalion has been added to provide local protection for elements of the division against enemy air attacks, with a secondary mission of firing on enemy mechanized or other ground targets. Generally speaking the artillery team member has the mission of rendering close and continuous fire support to the elements of the division, neutralizing or destroying those targets which are most dangerous to the supported force.

The tables of organization provide the division commander with a tool for security and reconnaissance missions in the form of the Reconnaissance Battalion. This battalion consists of a Headquarters and Headquarters and Service Company, four Reconnaissance Companies and a Medical Detachment as compared to the former organization of a Headquarters and Headquarters and Service Troop, four Reconnaissance Troops, a Light Tank Company, and an Assault Gun Troop. In order to overcome the handicap of inadequate armament and poor maneuverability of the M-8 Armored Car, a light tank has been provided as the major combat vehicle. Thus the platoon organization of each Reconnaissance Company was revised and now contains: a Scout Section, mounted in ¼-ton trucks; a Tank Section, mounted in M-24 light tanks; a Rifle Squad, mounted in an armored utility vehicle; a Support Squad, mounted in ¼-ton trucks with one 81mm mortar. Each platoon is, in effect, a small task force containing the common characteristics of all ground reconnaissance agencies, i.e., mobility, armor protection, heavy automatic fire power, flexible organization, and adequate multiple communications. The Reconnaissance Battalion is organized and equipped to provide security and reconnaissance for the division, execute combat missions suitable for light armored units, and operate as an armored task force when suitably reinforced.

The Armored Division is sensitive to weak bridges, minefields, poor roads and other obstacles. The Armored Engineer Battalion is the tool to overcome these obstacles. A notable addition to the Engineer Battalion is the Bridge Company which had been deleted in the reorganization of 1943. Combat experience has proven that bridging equipment must be immediately available to the division in order that frequent obstacles requiring small amounts of such equipment can be overcome with minimum delay. The Armored Engineer Battalion has further been bolstered by the addition of a lettered Engineer Company, making a total of four. Thus the present Armored Division contains a powerful Armored Engineer Unit which will greatly increase its combat effectiveness.

The service support of the division has been bolstered in the form of a Quartermaster Battalion. This battalion has been added to provide organically the means for handling and transportation of supplies (fuel, ammunition, food, clothing, etc.), bathing and laundry facilities, and the graves registration service. Specifically, the battalion is composed of a Supply Company, and a Field Service Company. The Supply Company has a Supply Platoon containing personnel to operate the Quartermaster Class I, Class II, III and IV sections; three Truck Platoons; and a Company Headquarters. The Field Service Company has a Field Service Platoon containing personnel to operate the bath, laundry, and graves registration sections; three Truck Platoons, and a Company Headquarters.

The Armored Division, combined arms team, would not be complete without air support. Organically, the division possesses 20 liaison aircraft providing elevated observation posts for directing artillery fire, gathering information as to friendly and hostile troop movements, reconnaissance, column control, and a multitude of other missions. Air support in the form of fighter bombers, reconnaissance planes and the like is a must for this division. The offensive potential of the Armored Division demands the support of the air for close support missions, column cover and distant reconnaissance to provide early information. Air-ground cooperation was developed to an amazing extent during the last war. Communications equipment and staff officers are organically provided within the division to further this teamwork.

Other changes worthy of note are: the addition of a Military Police Company, as opposed to the former Military Police Platoon; the combination of Headquarters and Headquarters Companies with the Service Company in each of the Tank and Infantry Battalions; the augmentation of the Armored Signal Company providing more efficient multiple communications means; and the addition of a Replacement Company to process divisional replacements. There are a host of minor changes in equipment and personnel which are much too detailed to mention here, but which are made as a result of lessons learned in combat to permit the Armored Division to operate more efficiently.

In summary, the Armored Division is a family of all arms and services organized and furnished in such a manner as to provide a flexible organization capable of performing violent and effective offensive combat. Under the corps and army field commanders this division is a weapon for decisive missions.

Another member of the family is the Armored Cavalry Regiment (light). Experience gained in World War II conclusively indicated that a Cavalry Group consisting of two squadrons was not correctly propor-

tioned. Further, the Reconnaissance Troop did not lend itself to dismounted action since the bulk of the personnel were composed of crewmen. It is noted that the missions assigned to Cavalry groups in the European Theater of Operations were, in order of duration: 1. Defensive Operations; 2. Special Operations; 3. Security; 4. Offensive Operations; 5. Reconnaissance.

As a result of experience gained the Armored Cavalry Regiment (light) has been proposed to replace the Cavalry Group. This regiment includes a Headquarters and Headquarters Company and three Reconnaissance Battalions. Each Reconnaissance Battalion consists of a Headquarters and Headquarters and Service Company, three Reconnaissance Companies, a Medium Tank Company, and a Medical Detachment. The Reconnaissance Companies are organized in the same manner as similar companies in the Armored Division. This also applies to the Medium Tank Company, which is the same as the standard Armored Division Medium Tank Company.

In the present system of ground reconnaissance agencies the Armored Cavalry Regiment (light) is the largest and highest level reconnaissance organization in the field army. It is anticipated that this regiment will be provided on the basis of one per army corps performing the general mission of security and reconnaissance for the corps, considering that security and reconnaissance are interwoven and inseparable. However, the regiment is organized, equipped and trained to engage in offensive or defensive combat—mounted, dismounted, or in a combination of both. The Armored Cavalry Regiment (light) is also a team of combined arms, providing the corps commander with a convenient nucleus around which a mobile task force may be formed for the execution of special operations. Reinforcements may include artillery, engineers, heavier armor, and/or infantry.

In late 1947, Headquarters Army Ground Forces submitted a recommendation to the Department of the Army for the organization of a Tank Group. It was proposed that this group would replace the Armored Group and consist of a small Headquarters and Headquarters Company, without a service echelon, to provide supervision for the attached tank battalions and personnel for the Corps Armored Cavalry Staff Section. The combat elements of the group would consist of three tank battalions, heavy or special. The Heavy Tank Battalions are to be identical to the heavy battalions in the Armored and the Infantry Divisions. Special battalions might be equipped with flame throwing tanks, bridge carrying tanks, mine exploding tanks and the like as the situation might require and development may provide. It was not anticipated that the group would operate as a unit in combat but rather that the battalions would be attached to other combat elements of the corps as the situation might require.

With the increase in the tempo of modern warfare, and the assumption of a global aspect, it becomes apparent that overwater operations will become increasingly important. Within the amphibious team, armor is again provided as an integral part in the form of the Amphibious Tank Battalion. The primary mission of the Amphibious Tank Battalion is to form the first wave of, or furnish flank protection for, the assault landing force, and to provide initial fire support in the beachhead. The Amphibious Tank Battalion is administratively self-sufficient and is composed of a Headquarters and Headquarters and Service Company, four Amphibious Tank Companies and a Medical Detachment. Each Tank Company has as its major combat vehicle the LVT (A). This vehicle weighs approximately 20 tons, combat loaded, and its armament consists of one 75mm Howitzer and three Cal. 30 machine guns.

In conclusion, where there is a requirement for ground forces there will be a requirement for armor in some form. The infantry prefers not to enter combat without tanks to provide close support in every phase of combat; conversely armor prefers not to enter combat without infantry. The two, with artillery and engineers, and the necessary supporting services, are inseparable. This mutual respect and need facilitates the operation of the army team.

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The Combined Infantry-Armored Division*

by Colonel E. T. Conley**

OPERATIONS in World War II showed a constant desire by infantry division commanders for more armor, and by armored division commanders for more infantry. Actually each type of division was frequently reinforced with a major combat element of the other. Further, infantry divisions were frequently called upon to execute armored division missions and armored divisions were required to operate in the infantry role. Since the close of the war, reorganization in both types of divisions has reflected these wartime trends. The number of tanks organic to the new infantry division has been greatly increased while the infantry in the new armored division has been greatly strengthened.

In view of these facts, the proposal is frequently made to develop one combined type ground division, sufficiently strong in both infantry and armor to make it capable of performing the primary role of both the present type infantry and armored divisions.

The primary role of the infantry and of the armored divisions is based on current army field manuals. "The Infantry is essentially an arm of close combat. Its primary mission in the attack is to close with the enemy and destroy or capture him; in the defense to hold its position and repel the hostile attack" (FM 100-5). "The Armored Division is capable of engaging in most forms of combat, but its primary role is in offensive operations against hostile rear areas.—In general the role of the infantry divisions operating with armored divisions is to make the opportunity, and the role of the armored division is to exploit it" (FM 17-100).

This discussion is limited to the following points:

1. Assumptions made for purposes of discussion.
2. Training of the combined division.
3. Logistics involved in the combined division.
4. Operation of the combined division.
5. The principle of pooling units as it applies to the combined division.

Assumptions Made for Purposes of Discussion

There are numerous conceptions of the make-up of the combined division, particularly with respect to its strength, mobility and efficiency as compared with the present infantry and armored divisions which it would replace. Therefore, for the purpose of this discussion, certain assumptions have been made concerning fundamental characteristics. It is assumed that the combined division must retain the nine battalion infantry strength of the present infantry division and the four battalion tank strength of the present armored division. It is assumed that the combined division must retain the mobility of the present armored division. It follows as a corollary to these two assumptions that the combined division must be considerably larger than either the present infantry or armored division; and further, with our national manpower as a controlling factor, it follows that fewer of these large combined type divisions could be formed than of the smaller separate type divisions. Finally, it is assumed that no sacrifice of the best qualities which the best infantry and armored divisions displayed during World War II would be acceptable in the combined division.

Training of the Combined Division

While it is true that there is now a considerable overlap in the training requirements of the two types of divisions, it is also true that there are some radically different training requirements, principally in the field of tactics and technique. Generally the tactics and technique of one type of division are based on the proper maneuver and employment in battle of men on foot supported by all other means available, while the tactics and technique of the other are based on the proper maneuver and employment in battle of men in armored vehicles supported by all other means available. Perfection in both types of operation by the same commanders on all levels, and by the same troops would necessarily be the objective. Past experience indicates that this perfection would be most difficult to accomplish. Under the pressure of rapid mobilization and subsequent heavy replacement demands due to combat, it seems highly improbable that it could be attained.

Logistics Involved in the Combined Division

From the logistical point of view, little can be said in favor of the proposed combination. We have assumed that the plan would result in a reduction in the total number of divisions which could be organized. However, the result would be an increase rather than a decrease in the over-all amount of equipment needed.

The exact number of combined divisions that we could organize is immaterial for the purpose of this discussion. With complete mobilization, however, the total would certainly be closer to the sixty-six infantry divisions than to the sixteen armored divisions which were organized during World War II. With this in mind, the increase in the over-all amount of equipment required becomes more apparent when we consider that each combined division will have at least as many tanks as each armored division has now. In addition, each combined division will require the transportation necessary to transport its nine infantry battalions, disregarding other transportation needs. All, or at least the bulk, of this transportation must be of the armored personnel carrier type in order that the infantry can give the tanks the same type of support which armored infantry now gives them.

The only alternative to making this equipment or-

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ganic to each division is to make it available in pools controlled by a higher headquarters such as Army. From an operational point of view, this is not considered a satisfactory solution. The reason for this conclusion is explained later in the discussion.

The over-all increase in combat vehicles would place a tremendous strain on both industry, which would have to fill initial and replacement requirements, and the field services, which would have to provide the fuel, spare parts and maintenance at theater, army and division level.

Operation of the Combined Division

From the operational point of view, the proposed combination has much merit. Flexibility in the employment of divisions by corps and army would be greatly increased: A corps commander on the defense would no longer have to decide whether to employ an armored division in the line to relieve a combat weary infantry division, or to let the infantry division remain there a while longer in order to permit retaining the armored division for a prospective offensive. A more equitable distribution of the combat load on the divisions in a corps and army would be possible.

Of equal importance, the telltale massing of armored divisions in the area of a corps or army which is so difficult to conceal, and which is such a sure indication to the enemy of what is coming, would no longer be necessary.

On the other hand, however, the larger combined division would present certain very undesirable operational characteristics.

While performing an infantry role, which experience indicates would be the case usually, a large part of the combined division would be idle. This would present to the division commander problems of equitable distribution of the combat load within the division, and of tactical disposition of a large mass of vehicles in the division area. It would present to higher commanders the problem of supporting and maintaining within the combat zone large numbers of men and large amounts of equipment which too often would take no part in combat. It would present to commanders of all levels the problem of overcoming the inertia which this idleness creates.

The Principles of Pooling Units as Applied to the Combined Division

One of the most common conceptions on which the combined division is based depends on the principle of pooling. According to this principle, certain types of units are maintained in pools under a higher headquarters which assigns them to divisions as the situation demands. Pooling in principle is sound and was so proved in World War II. However, its application has very definite limits because of its effects on different types of units. As applied to the combined division it would mainly involve pooling of any or all of the following units: tank battalions, infantry battalions and transportation units, such as armored personnel companies required to carry the infantry battalions.

The pooling principle is acceptable only when applied to those units whose efficiency is not dependent upon close and intimate teamwork between the individual soldiers from the pool and the individual soldiers of the unit to which an attachment is made from the pool. Such teamwork is not necessary between the truck drivers of a truck company and the soldiers of an infantry battalion they transport. Such teamwork is not necessary between the individual soldiers of the heavier artillery battalions and the infantry soldiers they temporarily support; they rarely ever see each other. These units readily lend themselves to the pooling principle. On the other hand, the very essence of a successful tank-infantry operation (regardless of which is the supported arm) is the application of highly developed teamwork on all levels down to and including the tank crew, the infantry squad and the drivers of the armored personnel carriers. Their teamwork can be obtained only as a result of personal acquaintance and mutual confidence developed throughout the entire training period and later during combat. It cannot exist between infantry and tank units who, though similarly and equally well trained in their respective roles, are temporarily assembled from pools, and personally meet each other a few hours before the battle, or perhaps never at all.

Conclusion

In conclusion, an analysis of the points covered in this discussion favors the retention of the present two types of divisions. Experience in World War II has been admittedly an important factor in forming this conclusion, and therefore it is perhaps open to the criticism that it represents good hindsight, but may be lacking in foresight. But the manner in which the armored and infantry roles will be accomplished in any future war will depend to a great extent upon the types of weapons available in that war. The ability of the infantry soldier, as well as the tank itself, to survive on the battlefield of the future is being questioned currently. However, we must fight any war which may come within the next three or four years with substantially the same weapons we used during World War II. Hence, lessons learned in that war in the use of these weapons are rightly given great weight at this time.

On the other hand, we must reserve the right to change our minds. We must be continuously looking for sound reasons for change in accordance with the requirements made by new developments. A year from now—probably more but possibly less—such developments may well make the proposed combination mandatory, or on the contrary, they may make the creation of even a new type of division necessary. When these developments have been made, tested and accepted, the change necessary to accommodate them must be made promptly. For the present, the conclusion arrived at concerning this proposal appears to be sound.

The head of the Research and Evaluation Division of The Armored School gives us a general background on the evolution of Armor, its use in World War I, and the high points of the story of Armor knifing its way through World War II.

HISTORY OF ARMOR

by Lieutenant Colonel Arthur C. Harris

THE history of Armor begins with the history of man. In the dawn of recorded history, man is seen emerging from the forests with a shield on his arm which he used to ward off the rocks hurled by his enemies. When the shield alone became inadequate, he developed body armor, first of skins, then of hardened leather, quilted cloth, bronze, and iron.

As man increased his firepower he found that the weight of his weapons, armor protection, and ammunition (arrows, spears, javelins) became such that he could no longer fight effectively. As a result, an armored vehicle was developed in the form of skins stretched over a rude frame, which was mounted on a sled and pushed by a group of warriors. This early armored vehicle had very limited mobility. From the book of Judges (about 1381 B.C.) we find, "And the Lord was with Judah, and he drove out the inhabitants of the mountains, but could not drive out the inhabitants of the valley, because they had chariots of iron."

The development of armored vehicles continued with indifferent success. An effective balance of firepower, mobility, and protection was not easily achieved. Leonardo da Vinci, in 1482, designed a covered chariot operated by men turning an offset shaft similar to the crankshaft of today. In the 19th Century the use of steam for motive power was attempted, but had to be abandoned for military purposes because of the necessity of stopping every few minutes to replenish the water supply.

The development of the internal combustion engine and the endless track made possible the tank of today. The engine provided a reliable source of power, and the endless track gave cross-country mobility which wheeled vehicles could not equal. Prior to World War I, armored caterpillar vehicles were developed in Austria-Hungary and Australia, and wheeled armored vehicles in France and the United States, but the major world powers turned them down.

The United States produced the first successful caterpillar traction device; however, a Frenchman is credited with the first tank, and the British developed the first tanks that could be used on the battlefield. In 1915, Lieutenant Colonel (later Major General) E. D. Swinton of the Royal Engineers, backed by Winston Churchill, began the development of a powered combat vehicle on caterpillar tracks. Utmost secrecy was observed, and when the vehicles were shipped to France in crates, they were labeled "Tanks" to conceal the nature of their contents from the Germans. In this way, the name "Tank" was first applied to armored caterpillar tread combat vehicles.

The British efforts to preserve secrecy in order to gain tactical surprise were successful. On 15 September 1916, modern tanks were used on the battlefield for the first time. In the battle of the Somme, 15 September 1916, the British committed 49 of these new "secret weapons" divided into small groups on a broad front. Only nine of these tanks, however, fulfilled their missions. The Germans knew nothing about them, the British commanders who employed them knew little more, and no precedent or past experience existed to guide their tactical employment. Mechanical failures hampered them from the beginning. Of the 49 tanks used, 17 failed to reach the line of departure, 9 were unable to cross the line of departure, 9 were held up after crossing on account of mechanical difficulties, and 5 became stuck in the attack. Partial success was realized however, when nine fulfilled their missions. There were few casualties among the personnel.

In spite of the large percentage of mechanical failures, it was apparent that impetus was imparted to the attack by the use of Tanks. All of the contending nations immediately recognized the value of this new weapon and began building them. The French soon followed the British while the Germans salvaged captured tanks, and used them against their former possessors. The Germans developed and built tanks of their own as rapidly as they could. The American Tank Corps, created on January 26, 1917, entered its first engagement September 12, 1918, using French Tanks because American Tanks in quantity were not available before the end of the war.

Armor was first employed on a large scale on 20 November 1917 when the British used 378 tanks in their attack on Cambrai. The tanks went forward on a seven-

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mile front followed by six infantry divisions. At the end of 12 hours a penetration nearly 6 miles deep had been made, and 7,500 prisoners and 120 guns were captured. In the Third Battle of Ypres, without tanks it had required three months to make a similar advance. The Cambrai attack, however, although it penetrated deeper than any other trench warfare attack, fell short of complete success because no plans had been made for exploitation and no reserves, either tank or infantry, were available to continue the momentum which had been gained.

On 18 July 1918 in the Aisne-Marne offensive, the French Sixth and Tenth Armies employed 478 tanks in their drive on Soissons. The tank units were arranged in depth and gave added impetus to the first day's attack. They advanced as far and as fast as the infantry could follow.

The American Army employed French and American tank units with the Infantry in the reduction of the St. Mihiel salient on 12 September 1918. Objectives were reached and the salient was reduced in 36 hours.

In the Meuse-Argonne attack, begun on 26 September, the 304th American Tank Brigade, consisting of the 344th and 345th American Tank Battalions and two French Groups, was used in a supporting role. About this time, General Pershing offered "anything in the AEF for 500 additional tanks," but tanks were simply not available in sufficient numbers. The tanks that were available operated successfully. They performed their missions and reduced infantry casualties.

By the end of the war, Armor had been employed by the British, French, Germans, and Americans in a total of 91 World War I engagements.

The period between the World Wars was one of development, both of matériel and tactics. There was sharp disagreement among military men of all countries on the future employment of armor. One group maintained that the only use for tanks was in a supporting role to aid the Infantry in reaching and holding its objectives. It had been proved in World War I that tanks so employed were highly effective. Another group maintained that tanks employed in mass, taking full advantage of their mobility, could produce decisive results.

In 1935 the Italian Army used large numbers of light tanks in their conquest of Ethiopia. They scored striking successes, but the opposition offered by the primitive tribesmen was so weak that the operations were of little significance.

Armored forces were next employed in the Spanish Civil War which began in 1936. Germany and Italy sent tanks to Franco's aid while Russia strengthened the Republican Army with quantities of British and Christie type tanks. Tanks in Spain were generally used in small groups and as a result did not obtain decisive results. In March of 1937, 200 Italian tanks started for Guadalajava as part of a larger force. The tanks soon outdistanced the Infantry and Artillery, and were spotted by enemy aviation. They were helpless against the resulting air attack. Before the Infantry and Artillery could come to their aid, they were almost completely annihilated.

It was the German Army which first showed the world what Armor could do in modern battle. They were the first to demonstrate the effectiveness of masses of tanks supported by mobile Infantry, Artillery, and Aviation. On 1 September 1939 the German Army invaded Poland. Fourteen Panzer Divisions spearheaded the drive and within a week the Nazis were attacking Warsaw and by the end of the month Poland had capitulated. The world was amazed at the devastating power and speed with which the German blitzkrieg had unfolded. But this was only the beginning. Even more startling events were in store for the French and British Armies in France.

On 10 May 1940 the German forces struck to the west and south. A three-pronged armored drive through the Ardennes Forest in southern Belgium crossed the Meuse River on 13 May. The German armor raced 220 miles to the English Channel in 11 days, cutting the Allied Armies in two. The British forces were evacuated by sea from Dunkirk. Belgium was forced to surrender. Without halting, the German armored columns turned south, fanning out as they advanced, dividing the French resistance and overwhelming it. On 12 June France surrendered.

In World War I Germany had succeeded in penetrating the French defenses, but failed to attain a decision because means of exploiting the successes were lacking. In World War II German armor furnished the sustained drive which was needed. The basic plans for both attacks on France were essentially the same.

Armor had come of age. In ten months the German Army had waged three victorious campaigns. In about ninety days of actual fighting it had defeated six countries, two of them with armies considered the best in Europe. The nations of the world were now fully aware of the power inherent in Armor when it was employed in mass in conjunction with mobile supporting arms. The United States, fast becoming "the arsenal of democracy," began building tanks which were to prove their worth on the battlefields the world over. In July 1940 the Armored Force was organized at Fort Knox, Kentucky, and the organization and training of American armored divisions began.

The scene of armored combat shifted to the desert of North Africa. Italian forces planned to attack the British in Egypt from two directions. Graziani began an eastward advance from Libya on September 13 while another Italian Army started north from Ethiopia. General Wavell, the British commander, left two Infantry Divisions to delay the advance from the south while the main force surprised the Italians at Sidi Barrani, 60 miles inside Egypt. British armor, supported by Infantry, drove the Italians westward. A tank column with motorized infantry crossed the desert from the south to strike the retiring Italians from the rear. The Italian Army was cut off east of Bengasi and destroyed. Over 130,000 prisoners were captured at a cost of 1800 cas-

ualties. On 8 February 1941 the British occupied Cyrenaica and the eastern half of Libya as far as El Agheila.

The British drive stopped at El Agheila because troops were needed in Greece and the Italian threat from the south had to be halted. With his army depleted by the reinforcements sent to Greece, Wavell attacked a superior Italian Army in Ethiopia from three directions. The main attack was made by an armored force which covered 1,725 miles in fifty-three days and took Addis Ababa. On 19 May 1941 Italian resistance ended and the British southern flank was secure.

While the British Army was being driven out of Greece by the German armored spearheads a new threat developed in North Africa.

In March, Field Marshal Rommel arrived in Africa with the 15th Panzer, 21st Panzer, and 90th Light Infantry Divisions, to form the Afrika Korps. In support were seven Italian divisions, one armored and six infantry. The superior Axis force quickly drove the two remaining British Divisions back to the Egyptian border.

After the Greek debacle the British began in July to build up their forces in Africa. The Eighth Army was formed, consisting of one armoured (the 7th) and four Infantry Divisions.

On 17 November 1941 the new British Army began an attack with a wide end run around the south of the German positions. At first they made the mistake of dispersing their armored strength, which permitted Rommel to defeat three tank brigades in detail. The German tank guns outranged the British. When they concentrated their tanks they won. Realizing this advantage, Rommel with one hundred tanks cut up the British rear and drove into Egypt. The German force itself was so badly cut up in the action that it had to retire to El Agheila. Both sides settled down to repair their losses (28 January 1942).

When the European Continent had been cleared of opposition by the Campaign in Greece, the German General Staff prepared to take on a new opponent. The Nazis invaded Russia on 22 June 1941 with 180 divisions, 20 of which were panzer. The main drive on Moscow set the pattern for the German offensive along an 1,800-mile front from the Arctic Ocean to the Black Sea. In this drive, Marshal Bock sent two Panzer Armies racing ahead of his infantry in a double envelop of Bialystok, which they surrounded. When the infantry came forward to complete the destruction of the encircled Russians, motorized forces with armored spearheads disengaged and went on to envelop Minsk.

These tactics were repeated by the Germans against stubborn resistance along the entire front. By the end of 1941 the Germans occupied a broad strip of Western Russia over 500 miles wide. The Russians traded space for time, built up their armies and increased their armored strength with equipment furnished by the Western Powers. The war in Russia continued without either side being able to gain a decision until the landings in Normandy. By that time the diversion of German forces to the west made possible the Russian drive into Germany which ended on VE Day.

When Japan attacked Pearl Harbor on 7 December 1941, the United States entered the war. Armor did not figure prominently in the war in the Pacific, but nevertheless did play its part in the defeat of Japan. Separate tank battalions played important supporting roles from the start. In the Philippine Islands Campaign of 1941-42, the 192d and 194th Tank Battalions fought notable roles in the defense of critical points, covered the withdrawal to Bataan on wide fronts and aided materially in the final defense. The first infantry to ride American tanks in an attack were primitive headhunters from Northern Luzon who counterattacked the Japanese in Bataan. American armor operated in most of the campaigns in the Pacific, making amphibious landings in the Western Pacific, New Guinea, Southern Philippine, and Luzon campaigns.

On 26 May 1942 the lull in North Africa ended. Rommel launched his offensive first and on 13 June trapped the British Armor at Knightsbridge, destroying all but 70 of 300 tanks. The Eighth Army, badly battered, withdrew and prepared for a last stand at El Alamein, only seventy-five miles from Alexandria. Fortunately for the British, the Afrika Korps was too short of water and supplies to break through. The arrival through Suez of tanks, planes, and supplies from the United States helped the British build up their defense. General Montgomery took command of the Eighth Army, and with the aid of the war materials coming in, prepared for a new offensive.

On 31 October 1942, after a heavy artillery preparation, Montgomery launched his attack in the final battle of El Alamein. Four infantry divisions, supported by tanks, penetrated the northern sector, cleared the minefields, and opened two tank lanes. The 1st and 10th Armoured Divisions followed through and continued the attack while the 7th Armored Division on the south, contained the 21st Panzer Division. The British had broken into, but not through, the German defenses on the north. When Rommel concentrated his tanks in the north the British 7th Armoured also moved north and with the 1st and 10th, split the Axis armor, cut up the German rear, and on the 2nd and 3rd of November destroyed 260 enemy tanks. The Eighth Army poured westward in pursuit of the battered Afrika Korps. Rommel withdrew the remnants of his army so rapidly that the British could not catch him. Heavy rains and minefields delayed the pursuit. They did not catch up until 18 February 1943 along the old French Mareth Line, over 1100 miles west of El Alamein.

On 8 November 1942, as the pursuit of the Afrika Korps was gaining momentum, American armored divisions first appeared in action. The 2d Armored landed on the west coast, north and south of Casablanca, while the 1st landed east and west of Oran. After token opposition the French capitulated and joined the Allies.

Within two weeks of the landings the Americans and British—who had debarked at Algiers—were racing eastward in an effort to get to Tunisia and catch Rommel from the rear. German reinforcements from Europe arrived in the nick of time and stopped the advance in the mountains of western Tunisia. The cold, rainy winter slowed down operations. The German were penned in northeastern Tunisia by the British Eighth Army on the south and the combined British-French-American First Army on the west. Rommel attempted to break out with a powerful armored thrust through Kasserine Pass, but had to withdraw when British and American armor, supported by two infantry divisions, succeeded in stopping him after four days of hard fighting.

While the American 1st Armored Division threatened the German rear in the vicinity of Maknassy, Montgomery pinned them down, and, delivering a left hook, drove northward. When the Nazis abandoned their positions, British armor kept on their heels. The final Allied drive to clear North Africa was launched on 23 April. The American II Corps on the east, fighting an infantry battle for 10 days, advanced 15 to 18 miles and set the stage for the final effort. With infantry pressing forward on the right and left, the 1st Armored Division drove through with two spearheads to the north and east. At the same time, a crushing tank attack by the British resulted in the capture of Tunis on 7 May. The British 7th Armoured cornered the 15th Panzer Division north of Tunis and the 6th Armoured made a night drive, which cut off the German retreat into the Cape Bon Peninsula. The speed and power of the Allied armor had cut up the German forces before they could form for a protracted defense. On 8 May Bizerte was cleared by American armor. On the 12th the Axis forces in Africa surrendered. After a two-month preparation the Allies struck again. On 10 July 1943, landings were made on the southern coast of Sicily. Combat Command "A" of the 2d Armored Division landed with the 3d Infantry Division and before dark the rest of the division was ashore. Remaining elements of the division landed with the 1st Infantry Division at Gela and drove off German tank attacks at Gela and Niscemi and supported the infantry attacks until 16 July when the division assembled at Campobello in 7th Army reserve. On 22 July the 2d Armored drove 60 miles across the island in ten hours and captured Palermo. The armored job was done in Sicily.

When the Allied landings were made in Italy at Salerno, separate tank battalions landed with the infantry to assist in the establishment of the beachhead. When the infantry on the left advanced to suitable attack positions, the British 7th Armoured Division with the 23rd Armoured Brigade broke through, spearheading the attack through Naples to the Volturno River on its left, and then crossed the river to drive north along the coast to the Garigliano River.

At Anzio elements of the U. S. 1st Armored Division were used to strengthen the defense and counterattack German penetrations. The division broke out of the beachhead on 23 May 1944, driving through Rome to the north. The end of the war in Europe found the 1st Armored driving at will through the Po Valley.

On D-Day, 6 June 1944, elements of the 741st and 743d Tank Battalions rolled ashore with the first wave at Omaha Beach to begin the battle for the beaches. This was likewise true of the 70th Tank Battalion at Utah Beach. By dark the 745th, 746th, and 747th Tank Battalions were also ashore. Separate tank battalions played a supporting role in the initial stages of the Normandy landings. The task of the separate tank battalions was to assist the infantry to drive forward and secure positions from which the Armored Divisions could exploit their successes. General Eisenhower, in his report, said, ". . . the comparatively light casualties . . . were in large measure due to . . . the staggering moral and material effect of the mass of armor landed in the leading waves of the assault."

On 10 June the 2d Armored Division began its landings and elements were used to support the infantry attacks which were enlarging the beachhead. When the 3d Armored landed, it also committed its units in a supporting role. The constant, unremitting pressure of the Allied infantry divisions supported by armor prevented the Germans from forming an armored reserve. Every time the enemy attempted to replace armor in the line with a newly arrived infantry division, a fresh Allied attack necessitated its hasty recommittal.

On 19 July the British Second Army in the vicinity of Caen made its first strong armored thrust. At dawn a heavy concentrated air assault was made on the German positions. As the last plane dropped its bombs, the British VIII Corps with the 7th, 11th and Guards Armoured Divisions struck south, clearing Caen and driving on against the bulk of the German armor. By dark the Germans succeeded in establishing a strong antitank screen which stopped the attack. Although a breakthrough had not been achieved, the British did contain large German forces which aided in setting the stage for the American breakthrough.

On the 24th of July, American forces were ready and poised for operation COBRA. Previous to this, the infantry, supported by tanks of the separate tank battalions and the 2d and 3d Armored Divisions had made a steady, costly advance through the hedgerows of Normandy to a line which ran northwest and southeast from St. Lo.

The plan for operation COBRA was as follows: The British forces on the left were to maintain constant pressure in order to contain as many German units as possible and prevent their movement to the First U. S. Army front. VII Corps, in the center of the First Army, was to attack with three infantry divisions, who in turn would be passed through by the 2d and 3d Armored Divisions, followed by the 1st Infantry Division, motorized for the operation. XIX Corps on the left would launch its attack at the same time to cover the flank of the drive and VIII Corps was to attack a day later.

On the morning of 25 July, the Allied air force delivered one of the heaviest bombing attacks of the war on the German positions in front of the VII Corps. When the last bomb had dropped, the 4th, 9th and 30th Infantry Divisions, with tank battalions attached, attacked and drove through the weakened enemy positions for a gain of nearly two miles. The German positions were definitely broken. While the infantry divisions held the shoulders, the 2d and 3d Armored Divisions drove through on the following morning. By dark they had pushed 4 miles farther south beyond Canisy. The attack was gaining speed. On the 27th, the VIII Corps on the west flank continued its infantry attack, gaining as much as three miles. While the VIII Corps armor was waiting its turn, the 2d Armored of VII Corps continued its advance, gaining another 6 miles.

On 28 July, in the VIII Corps Zone, the 4th and 6th Armored Divisions drove through the infantry down the roads which converge on Coutances. By dark the 4th had captured Coutances and advanced a mile beyond the town, while the 6th had reached a point three miles to the southwest. In the VII Corps Zone, the 2d and 3d continued south and southwest. Infantry mopped up in the rear. Four American Armored Divisions abreast were now spearheading the breakthrough of the First Army. The enemy withdrawal of nine infantry, two parachute, one panzer grenadier, and two panzer divisions was degenerating into a disorderly retreat.

The 6th Armored stopped to liberate Granville on the coast while the 4th continued on toward Avranches. By the end of July, the 4th Armored had liberated Avranches, seized the important crossings of the Selune River, and was in a position to enter the Brittany Peninsula. The 6th Armored was west of Avranches, and the 2d and 3d were echeloned to the left rear.

The breakout had been accomplished and fresh Allied units continued to stream across the Normandy beaches. On the 1st of August, the Third U. S. Army became operational, taking over the right portion of the American sector. The drive which was begun at St. Lo was to continue without letup until the Allied Armies stood on the German border.

Meanwhile, what of the other Armies? The British Second and Canadian First Armies continued their slow advance against the stubborn resistance of the German Seventh Army which was strong in Armor. The American Third Army began exploitation to the south, with the American First Army protecting its communications. The First Army had gradually changed its direction of attack to the southeast. By the night of the 6th, the 3d Armored had swept on south and southeast to Mayenne.

The German Seventh Army had finally succeeded in massing four Panzer Divisions with fresh infantry support for a drive through Mortain to the sea at Avranches. It was expected that this attack would cut the supply lines of Third Army and also elements of the First Army. Thus the Germans hoped by this drive to stop the Allied advance and cut up the Third Army from the rear.

The attack struck the 30th Infantry Division of First Army at Mortain. When Mortain was taken, Combat Command "B" of the 3d Armored was moved to the north flank of the 30th Infantry. The 2d Armored Division moved into the area and assisted in the defense. For four days, the American forces beat off the repeated Panzer attacks, holding the Germans to a three-mile gain. Finally, on the 12th, the Germans had to admit failure, and Mortain was retaken.

The successful defensive action of the 30th Infantry Division with supporting armor at Mortain permitted the First Army to continue its eastward drive when the Germans attacked at Mortain. The 3d Armored Division spearheaded around the German south flank and drove north toward Falaise. At the same time the 4th Canadian Armoured, with the Polish Armoured Division, pushed south and east of Falaise. The Germans, realizing the danger of being encircled, concentrated all available armor in a futile attempt to prevent a junction of the two forces. On 19 August, the Polish Armoured Division met American tanks northeast of Argentan, trapping the remnants of the German Seventh Army. Three days later what was left of seven German Infantry Divisions and elements of three Panzer Divisions surrendered.

Going back to the 1st of August, and the spectacular operations of the Third U. S. Army, we find that resistance on the Third Army front was much lighter than in the north. On the first of August, the 4th and 6th Armored Divisions drove south of Avranches to open a wide corridor into Brittany. The 6th Armored Division swung west toward Brest and the 4th Armored on its left drove south 40 miles to Rennes. By the 10th of August, the 4th Armored had driven another 70 miles to capture Nantes and cut off the Brest peninsula; it then turned west and drove the scattered German units into Lorient. When the 6th Armored reached the western tip of Brittany, the only Nazi forces left in the province were the garrisons at St. Malo, Brest, and Lorient.

Other Third Army spearheads, the 5th Armored and 2nd French Armored drove around the south flank of First Army and assisted in closing the Falaise Pocket. While the First Army was fighting to trap the Germans at Falaise, the Third Army, taking full advantage of the weaker resistance in its zone, pushed its Armored Divisions eastward. The 4th Armored Division on the extreme right flank in the XII Corps Zone drove 500 miles to the Moselle River before it was temporarily stopped because of gasoline shortage in the vicinity of Nancy. The 7th Armoured Division in the 20th Corps Zone drove to Metz. Later the 4th Armored Division circled Nancy causing the first break in the historical western line of defensive cities.

While the armor of Third Army was sweeping across France, the Seventh Army landed on 15 August on the Mediterranean Coast and sent its spearhead, the 1st

French Armored Division up the Rhone River Valley. Driving through Lyon and Dijon, it linked up with the Third Army north of Chaumont on 11 September.

On the north flank, the British and Canadian armor were not idle. Five armored divisions spearheaded the drive along the channel coast to the border of Holland. The British 11th Armored swept north 195 miles in less than four days to capture Antwerp.

As the Third Army drove east and the British north, the First Army between them sent the 2nd French Armored to liberate Paris. The American 2d Armored crossed the Seine River north of the city, and the 3d Armored crossed to the south, setting the stage for the drive from the Seine to the northeast by the 2d, 3d, and 5th Armored Divisions. After advancing to Mons, over 150 miles in eight days, the 3d Armored fought a most unusual battle. The 3d Armored had liberated Mons and was waiting for the 1st Infantry Division to catch up. An estimated 30,000 German troops, elements of the Seventh Army, were retreating along a route to the west and parallel with the advance of the 3d Armored Division. The column turned east, headed for the Siegfried Line, and ran into the 3d. For three days the Americans had a field day. The 3d Armored, cut off on all sides, captured 8,000 prisoners from ten divisions. This battle was not over until the 1st Infantry reached Mons to relieve the 3d Armored and the infantry completed the roundup, allowing the Armor to drive on to the east. The Siegfried line defenses were weakened in this battle by the loss of over 25,000 captured, thousands killed, and the loss of large quantities of matériel and vehicles. The 3d Armored, by getting to Mons first had cut off the forces which might have slowed their eastward advance. On 12 September, the 3d and 5th Armored Divisions of First Army were on the German border. In two weeks' time they had driven from the Seine River to Germany, liberating Luxembourg, Liege, Sedan, and many smaller cities and towns.

While the Third and Seventh Armies were closing on the Moselle River and the First on the German border, the British and Canadian Armor drove north into Holland, liberating Brussels, Antwerp, and Ghent. The Airborne attempt to seize crossings over the Waal and Lower Rhine Rivers failed and the pace of operations slowed down. The Allied Armies had outstripped their supplies and had to curtail their operations.

Armor had its next test on the snow-covered hills of the Ardennes Forest when the Fifth Panzer, Sixth Panzer, and Seventh German Armies with seven Panzer Divisions burst through the thinly held American First Army lines. The German plan was to overwhelm the Allied defenses and drive through to Antwerp with their massed armor. The attack jumped off the morning of 16 December, and within 24 hours had cut the American defenses to ribbons.

The story of Armor in the Ardennes Bulge can be divided into three phases. First, the German fight for communications; second, halting the penetration; and, third, the reduction of the salient.

Two key road junctions were vital to the German plan. In order to supply their armor and insure the momentum of the attack, the German forces had to secure St. Vith and Bastogne. The Allied possession of Bastogne, gallantly held by the 101st Airborne Division, was assured when the 4th Armored Division drove from Arlon, through German holding forces, to reestablish the supply line of the beleaguered defenders. To the north, at St. Vith, the American situation was more critical. The 7th Armored Division was ordered to St. Vith from Holland to assist in the defense. Combat Command "B" arrived at St. Vith to find the situation almost hopeless. Only small fragments of the 106th Infantry Division were left and the enemy was but a few miles away. For six or seven days the 7th Armored assisted by Combat Command "B" of the 9th Armored and the remnants of the 106th and 28th Divisions, cut off from all sides, fought off the German attacks. The 82d Airborne Division, and 30th Infantry Division, advanced to within 20 miles of St. Vith, but did not move forward to establish contact with its defenders. After holding St. Vith against attacks by five Panzer and three Infantry Divisions, the 7th Armored was ordered to withdraw on 23 December. The defense of St. Vith had slowed down the German timetable long enough for the Allied Armies to regroup for the next phase of the Ardennes campaign.

To the south, the 101st Airborne Division with a part of the 9th Armored Division held out at Bastogne until their siege was lifted by the 4th Armored Division.

The 2d Armored Division halted the German drive farther to the west. After being relieved from its positions in the vicinity of Aachen, it immediately moved southwest to the vicinity of Dinant, Belgium to intercept the Panzer spearhead. The 2d Panzer Division was stopped within four miles of the Meuse at Celles, and, after a four-day battle, destroyed by the 2d Armored. The 2d Armored had driven south to encircle the 2d Panzer, and then proceeded to destroy it, at the same time blocking the attempt of other Panzer elements to break through.

By the time the 2d Panzer was mopped up on the 26th of December, the force of the German thrust had been expended and the Americans began operations to regain the ground they had lost.

The reduction of the salient was begun early in January 1945, the 6th, 9th, and 11th Armored Divisions drove steadily north and east from the vicinity of Bastogne against determined resistance, while the 2d and 3d advanced steadily southward to meet them. On the 16th, the 2d Armored contacted the 11th Armored in the vicinity of Houffalize and over half of the salient was reduced. On 23 January the 7th Armored recaptured St. Vith, the town it had stubbornly defended against overwhelming odds. When the 6th Armored reached the German border the campaign was over and the Allies could continue with their interrupted plans.

The next operation on the Allied schedule was to

close on the Rhine in preparation for the final drive into the heart of Germany. It was planned to begin the operation on the north flank, the Armies to close successively toward the south.

On the Allied northern flank, the British and Canadian Infantry launched an attack on 8 February from the vicinity of Nijmegen to the southeast. After a slow ten-day advance over flooded and water-soaked ground the 4th Canadian and 11th British Armoured Divisions drove through slowly toward Wesel. Shortly after this, on the 23rd of February, Ninth Army crossed the Roer northeast of Aachen, securing the bridgehead with infantry supported by separate tank battalions, enabling the 2d, 5th, and 8th Armored Divisions to pass through and drive northeast. The 2d Armored led, driving to the Rhine on the right flank, then turned north along the river, clearing the banks of resistance as it went. The 5th Armored spearheaded in the center and the 8th Armored with the 35th and 75th Infantry Divisions cleared the last resistance west of the Rhine at Rheinberg.

The First Army crossed the Roer on the right of the Ninth three days later. Its mission was to protect the right flank of the Ninth Army, then turn south to clear the Cologne Plain and, finally, to link up with Third Army from the south. The 3d Armored in the left of the Army zone swept from the Roer in the vicinity of Duren across the Cologne plain and entered Cologne on the 5th of March.

The 9th Armored Division drove rapidly through the German elements to the town of Remagen, on the bank of the Rhine, where on 7 March it scored one of the most striking successes of the war. The Allied Forces hoped, but did not expect, to seize a bridge over the Rhine before it was destroyed. When the leading elements of the division crossed the hill overlooking the town they saw the Ludendorff Bridge still intact, carrying German vehicles and troops across the bridge. The 14th Tank Battalion and 27th Armored Infantry Battalion of the 9th Armored drove through Remagen and had advance elements across the bridge before the surprised enemy could react. The Division, and later the III Corps immediately sent reinforcements in to the bridgehead which was gradually expanded against stiffening resistance. The speed of the armored drive, combined with the initiative and aggressive spirit displayed by the troops from the private up to the Corps Commander had resulted in a success which was to have a profound influence on subsequent operations.

After eliminating the resistance in the Saar-Moselle triangle, the Third Army sent its 11th and 4th Armored spearheads eastward. The 11th Armored broke through north of Kyllburg on the 7th of March. Advancing northeast with increasing rapidity, it reached the Rhine at Andernach on March 9th and linked up with the First Army. The 4th Armored Division on its right drove 70 miles in 58 hours to reach the river, and sweep southeast another 70 miles to clear the banks and meet the Seventh Army coming from the south.

After the 12th American and 1st French Armored Divisions closed the Colmar Pocket on 5 February, the scene of action on the south shifted to the 7th Army, which on 15 March attacked north through the Siegfried Line toward the Rhine. The 6th and 14th Armored Divisions of Seventh Army pushed north while the 4th and 11th of 3d Army drove south to meet them. The two armies met along the Rhine encircling the German defenders to the west, who were cut to pieces by the 10th and 12th Armored Divisions in their advance to the river. The envelopment by the two armies had decimated the German First and Seventh Armies, captured over 81,000 prisoners and cleared the western bank of the Rhine south to Speyer. The operation was completed and on the morning of 23 March the Third Army successfully made a surprise crossing of the Rhine opposite Darmstadt.

Having closed to the Rhine, the Allies prepared for the final campaign. The seizure of the bridgehead had forced the Germans to weaken their other defenses in order to contain the thrust at Remagen. This weakening of their defenses made possible the Third Army surprise crossing and reduced the resistance against the main effort on the north. The greatest German strength, however, was still concentrated north of the Ruhr. The plan was to force a crossing at Wesel, isolate the Ruhr industrial area, and drive eastward.

On the night of 23 March the crossings were successfully initiated by the British Second Army and the American Ninth Army on its right. The 8th Armored Division crossed into the bridgehead and on the 28th began a steady attack against stubborn resistance of the 116th Panzer Division. The 2d and 5th Armored Divisions drove past the Ruhr. When the 2d Armored contacted the 3d at Lippstadt, the 8th disengaged and moved around the north to Lippstadt and drove westward to reduce the pocket. As the 8th disengaged so did the 116th Panzer which moved eastward to go into an assembly area preparatory to an attempt to break out. The 8th Armored, after moving twice the distance the 116th Panzer had to move, entered the German assembly area first, defeated the Panzer units in detail and forestalled the attempt to break out.

While the Ninth Army was securing its bridgehead, the First Army broke out and started eastward. On 25 March, the 3d Armored Division attacked, sweeping east and north to Lippstadt where it contacted the 2d Armored on 1 April, and closed the Ruhr pocket, after a 75-mile drive in one day.

With the Rhine crossed all along the front, the Allied Armored Divisions ran wild. British armor drove across the north German plain through Bremen and Hamburg, and with the American 7th Armored, crossed the Elbe and drove to the Baltic. In central Germany, the American armored divisions drove eastward on a sightseeing tour. The 5th exploited to the Elbe, the 2d crossed the Elbe south of Magdeburg. The 4th, 6th, and 9th advanced to the vicinity of Chemnitz, then moved south and penetrated Czechoslovakia for an

average of 40 miles. The 16th Armored pushed from the German border to take Pilsen and the 11th advanced halfway to Vienna from the Austrian border, with the 13th paralleling it on the right. In the Seventh Army zone, the 10th Armored, after breaking out of an encirclement at Crailsheim, drove southeast with the 12th Armored on its left into the Nazi Redoubt of southern Austria. The 20th Armored advanced through Munich to Salzburg, Austria. The French 1st and 5th Armored Divisions moved north of the Swiss border into Austria.

When the armies of the Western Powers had reached the line agreed on with Russia, they halted and waited for the Russian Forces. Resistance in Europe ended when junction was made with the Russians along the Elbe, in Czechoslovakia and in Austria.

Immediately after the cessation of hostilities in Europe, plans were put into effect to move two American armored divisions to the Pacific for the invasion of Japan, but the early capitulation of the Japanese Empire made the move unnecessary.

In the Pacific the separate tank battalions participated in many of the amphibious assault landings, including Leyte, Luzon, and Iwo Jima. On Luzon the 44th, 716th, 754th, and 775th Tank Battalions supported the Infantry attacks and helped liquidate the Japanese 2d Armored Division. The Japanese 2d Armored Division was employed in a piecemeal fashion, never committing more than 16 tanks in an attack. As a result of this piecemeal employment, the only armored division in the Pacific was ineffective.

At the end of World War II, armor was recognized as one of the major combat arms. Developed and first used by the Allies in World War I, tanks showed promise of being able to restore war of movement. The development period between the world wars resulted in technical improvement, but the most effective tactical use was still in doubt. The astounding successes of the German Panzer units in the early days of the Second World War caused the world to wonder if armor by itself, with supporting air forces, could not win. The campaigns in Africa showed that armor alone was not sufficient. Tanks required infantry, as well as air-support.

When the Allies invaded Europe and started on the long road to Tokyo, a doctrine of employment, learned from the Germans and tested in North Africa, had been forged. On all the fronts tank battalions supporting the infantry proved that they could ably support its advance, render effective assistance in amphibious landings, reduce its casualties, prevent a stalemate and actively assist in defensive situations. In the European Theater, armor employed in mass proved to be the most effective instrument with which to exploit successes to the utmost.

It might well be said that armor is the weapon of decision. Few decisive victories were gained in World War II in which armor did not play a substantial part.

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Order from the Book Department *The Armored Cavalry Journal*

Armor In The National Guard

A part of the postwar National Guard's new look is its "breakthrough arm," the two armored divisions which give a highly mobile and heavily armed striking force to the offensive power of the new National Guard. Together with the twenty-five infantry divisions, they comprise the Guard's divisional team, which reveals a decided contrast to the prewar Guard of only eighteen infantry and no armored divisions. This, of course, was due to the recognition of the important role played by armored units in the Allied victory.

These National Guard armored divisions are the 49th of Texas, commanded by Major General Albert Sidney Johnson, and the 50th of New Jersey commanded by Major General Clifford Ross Powell. Each has a total allotment of 91 component units and an authorized National Guard strength (100 per cent officers, 80 per cent enlisted men) of 8,831 officers and men. On June 1st the 50th Armored Division had a total strength of 4,143 and division organization was complete with the exception of two medical detachments. The 49th Armored Division had 3,097 men and 67 units Federally recognized.

The 49th Armored Division was activated on the 27th of February in 1947. Nucleus units were the 56th Cavalry Brigade and the 144th Infantry Regiment, a unit left an orphan when the 36th Division was triangularized. The combat commands of the 49th are commanded by men whose military careers go back to the First World War, with combat experience in both world conflicts. They are Brigadier General John W. Naylor of Fort Worth, Commanding CCA; Brigadier General Clayton P. Kerr of Dallas, Commanding CCB; and Colonel Gaston S. Howard of Longview, Commanding CCR.

General Johnson, lawyer, oil man, utility company president, entered military life in August of 1917 via the first Officers' Training Camp at Leon Springs, Texas, and served with the 90th Division through combat in France and the occupation of Germany. He joined the 56th Cavalry Brigade as a captain in 1921 and served with it until 1941. He was a staff officer in the 6th Armored Division and the 2nd Armored Corps until August of 1944 and Inspector General of the China Theater until February 1946.

The 49th Armored is fortunate in its situation near Camp Hood, where it holds a close association to the Regular establishment and has available the facilities of one of the outstanding military reservations in the country. It is here that the 49th will hold its summer field training. The Regular Army's Second Armored Division at Camp Hood has been especially cooperative and has "greatly facilitated the 49th's progress," according to General Johnson. When extensive Army-Air problems were held at Camp Hood in May, some 200 officers of the 49th attended as observers and were given full freedom of the training area. The division staff participated in Exercise CACTUS at Fort Sam Houston, involving all divisions in the Fourth Army and at the final CPX at Fort Sam some thirty members of the division staff were present. In addition, the 49th has taken full advantage of service schools. Since activation 40 officers and 117 enlisted men have attended the Command and General Staff College, The Infantry School, The Artillery School, and, of course, The Armored School.

Lack of armories constitutes one of the fundamental training problems. There are no state-owned armories in the division setup. The three battalions respectively centered in Dallas, Fort Worth and Houston have excellent Federal facilities available, but in the smaller communities units are using public school for armories and the county jails as supply rooms.

The 50th Armored Division of New Jersey was activated in August of 1946, when headquarters were opened in Newark and recruiting got under way. By the end of 1946 a total of 22 of the division's units had been organized with a total strength of 167 officers and 406 enlisted men. During the following year 24 units were organized and the personnel strength reached 258 officers and 1,233 enlisted men.

As of the first of June of this year, following extensive recruiting campaigns, the total division strength was 4,143 officers and men, and only two medical detachments were needed to complete the total divisional organization.

New Jersey's heavily populated area has somewhat restricted the use of armored vehicles. Traffic conditions hamper the use of roads. The majority of the state armories have wooden drill floors, thus requiring outdoor vehicle training classes.

Major General Clifford Ross Powell, Commanding General of the 50th Armored Division, has been a member of the New Jersey National Guard almost without interruption since February of 1913, when he enlisted in the 3rd Infantry. He served as a lieutenant with the 29th Division in World War I, and participated in a number of missions as an observer-bombardier while on detached service with the French Ninth Bombardment Group. He was severely wounded in combat.

During the last war General Powell served as Commanding General of the 44th Infantry Division. He also served as Psychological Warfare Officer of the 12th Army Group during the European campaigns, and as Deputy Director, Information Control Division, USFET, in the Army of Occupation in Germany until 1946.

In command of Combat Command "B" of the 50th Armored Division is Brigadier General Donald W. McGowan, who is a member of the Executive Council of the Armored Cavalry Association.

The United States Army Equestrian Team

Many readers of the JOURNAL will be interested in the results obtained by the Prize of Nations section (a difficult jump group) by the United States Army Equestrian Team in its first international contest in Europe; this section consists of:

Colonel F. F. Wing — Lieutenant Colonel Kayser
Captain John Russell — Lieutenant Colonel Symroski

This competition was held at Lucerne, Switzerland from June 12th to June 20th. Our team competed against those of Mexico, Italy, Switzerland, Great Britain and Ireland. The greatest competition was received from the Mexican team which had just competed at Rome and Montecatini where they won almost every class against most of the nations showing at Lucerne, including a team from France.

The courses at Lucerne are typical of those found throughout Europe and in general are about one-half mile in length with all types of obstacles, from 4½ ft. to 5½ ft. The last time the United States Equestrian Team competed at Lucerne was in 1936 just prior to the Olympic games in Berlin. While that team did well, its performance could not compare with that of the 1948 team, which won ten out of twelve first places, the other two first places going to Mexico. The following are the results at Lucerne:

Prize of Burgenstock

1. U.S.	Capt. Russell	on Rattler
2. U.S.	Col. Frierson	on Rattler
3. Italy		
4. Italy		

(Three other places to U.S.)

Prize of St. George

1. U.S.	Capt. Russell	on Blue Devil
2. U.S.	Capt. Russell	on Rattler
3. U.S.	Col. Wing	on Totilla
4. Switzerland		

(Four other places to U.S.)

Grand Military Prize

1. U.S.	Lt. Col. Symroski	on Swizzlestick
2. U.S.	Col. Frierson	on Rascal
3. Mexicō		
4. Mexico		

(One other place to U.S.)

Prize of the Lake of Lucerne

1. U.S.	Lt. Col. Symroski	on Swizzlestick
2. Great Britain		

(Three other places to U.S.)

Individual Championship in Prize of Nations

1. U.S.	Capt. Russell	on Air Mail
2. Mexico		

Prize of St. Gotthard

1. U.S. Team	Col. Wing	on Riem
2. Great Britain	Lt. Col. Symroski	on Roll On
3. Italy	Capt. Russell	on Blue Devil

Prize of the Irish Army

1. U.S.	Col. Frierson	on Rascal
2. U.S.	Capt. Russell	on Air Mail
3. Mexico		
4. Italy		

(Two other places to U.S.)

Prize of Meggenhorn

1. U.S.	Lt. Col. Kayser	on Dagmar
2. Mexico		
3. U.S.	Capt. Russell	on Rattler

(Two other places to U.S.)

Prize of Nations

1. U.S.	Col. Wing	on Democrat
	Capt. Russell	on Air Mail
	Col. Frierson	on Rascal
2. Mexico		
3. Great Britain		

Prize of Pilatus

1. Mexico
2. Mexico
3. Italy

(U.S. had sixth place)

Prize of Lido

1. U.S.	Capt. Russell	on Blue Devil
2. Great Britain		
3. U.S.	Col. Wing	on Riem

(Two other places to U.S.)

Grand Prize of Lucerne

1. Mexico		
2. Mexico		
3. Switzerland		
4. U.S.	Col. Wing	on Democrat

(Two other places to U.S.)

In winning the individual Championship in Prize of Nations, Captain Russell made two clear rounds. Colonel E. F. Thomson, Cavalry, Team Captain, reports that he feels that Lucerne was a good test of his horses and that they are ready for London, where again the stiffest competitors will be the teams from Mexico, with France, Italy and England very close. He further reports the team owes its success at Lucerne to the support given it by the European Command in allowing it to come to Germany last fall and complete its final training and utilize the excellent facilities available at Munich.

Between this issue of the JOURNAL and our September-October issue, the United States Army Equestrian Team will be in action in the 1948 Olympics in England. We shall carry the complete report of the Team activities as they represent our country in this outstanding sport for perhaps the last time. We shall also cover the results of several important shows following close upon the heels of the Olympic competition, in which the Equestrian Team also will take part.

The Reserve Officer And His Unit Schools

by Colonel Henry C. Newton

SEVERAL articles and letters in recent issues of the the Service journals indicate a genuine and most sincere effort on the part of both the assigned instructors and commanding officers of Reserve Units to develop a healthy training program for the Reserve officer either assigned to a unit or interested in furthering his military education. The following remarks are addressed primarily to those officers responsible for Unit Schools to aid them in the solution of their School problems.

The problems facing the Reserve officer today are many and complex; however, the specific problem of "what-to-do-with-an-evening's training" is one which can be solved regardless of "training obstacles both human and physical."

There are certain basic requirements for an evening's school. The program must satisfy three fundamental conditions:

A. The subject must be interesting.
B. The content must have real training value.
C. The subject must be well presented.

Faced with the problem of obtaining a maximum of participation, the question of interest is paramount. With the constant demands for our Reserve officers' evening hours—the factor of interest assumes monumental proportions. The subjects announced in the monthly bulletins or whatever means of notification is available, must have real "pulling power." Study the wording of the title—it must always be remembered that a School program is that of selling National Insurance. Perhaps among the officers of the unit there will be found an able and trained advertising expert—he should be consulted.

The officer giving his evening to his Unit School must be given in return the opportunity to take something away. Every minute must be crowded with real training value at a level which he will readily recognize as possessing immediate or potential value. This problem is in itself most difficult since there are officers of all grades and varied experiences—from the young Second Lieutenant who just received his Reserve commission to the Colonel who as a Major of Infantry commanded a front-line battalion during the Bulge. To find training value in a subject to satisfy these two extremes would tax the brain power of a Houdini. Regardless of an officer's experience or lack of experience, any well selected subject will contain substance of value—to the neophyte, news—to an experienced officer, a refresher.

The question of presentation is equality important—the interest-raising value of an announcement complete with a well selected subject will be lost if the subject is not well presented; not only will the subject fail to go over, but a sharp drop in attendance at the next evening school will be the net result.

The assigned instructor or officer selected to present the subject must be able to speak on his feet and handle the presentation in a convincing manner—he should be a master of his subject. If the assigned instructors are not good speakers, the officers of the unit who are must be sought. The services of an instructor trained in the art of public speaking should be obtained for those who are not! There are sufficient experienced officers in any large area to handle a wide variety of subjects—fit the subject to the Unit School and the officer to the subject.

An officer who understands the technique of subject presentation can make the most dry subject interesting. A combination of facts, humor, illustrative examples, and enthusiasm can make fifty minutes on the Articles of War sound like a Jack Benny program!

Fundamentally, all officers, either active or inactive, need further instruction in the Technique of Training, or as generally referred to, Training Management. A class was recently held at The Constabulary School on the subject of The Estimate of the Training Situation —this was but one subject in a series of forty-two hours in Training Management. The class consisted of both Regular and Reserve officers from Second Lieutenants to Lieutenant Colonels—yet out of a total of 106 officers only two had ever prepared an Estimate of the Training Situation—those two "estimates" were prepared as solutions to a problem given at one of our major Service schools. This class represented a broad cross section of the officer personnel now on active duty. It is, therefore, self-evident that Training Management can well be a subject lending itself to the Unit School.

Insofar as the organization of the school itself is concerned, it is wise to present two subjects somewhat different in nature during one evening session. Every officer should be familiar with the organization and tactics of the newly organized Infantry, Armored, and Airborne Divisions, as well as the present organization of the Department of the Army and Army Field Forces (formerly Army Ground Forces). Combined with Training Management, one can easily suggest the subjects for a training program for a series of twenty evening Unit School sessions—each session consisting of two 50-minute periods with a proper break.

Colonel Henry C. Newton was commissioned in 1918 upon graduation from The Field Artillery Central Officers Training School. Between the wars he was active in the National Guard. In 1941 he was assigned to the Armored Force, and served as G-3 and Assistant Center Commander. He next commanded the Armored Force Officers School at Knox, leaving in 1943 for overseas command of CCB, 12th Armored Division. He is now Assistant Commandant and Director of Training of The Constabulary School.

Such a program should consist of the following:

SCHOOL SESSION	*SUBJECT*
1st	The Department of the Army The Background of Training
2nd	The Army Field Forces The Estimate of the Training Situation
3rd	The Infantry Division—Organization The Estimate of the Training Situation
4th	The Infantry Division—Tactical Use The Estimate of the Training Situation (Problems)
5th	The Infantry Division—Tactical Use War Department Training Publications, Scope and Use
6th	The Armored Division—Organization Fundamentals of Military Instruction
7th	The Estimate of the Training Situation (Solution and Discussion)
8th	The Armored Division—Combat Commands Directives—Program and Schedules
9th	The Armored Division—Tactical Use Preparation for Training
10th	The Armored Division—Task Forces Preparation for Training (cont'd)
11th	The Airborne Division—Organization Presentation of Subject Matter
12th	The Airborne Division—Tactical Use Training Aids, Their Design and Use
13th	The Airborne Division—Tactical Use Projected Aids, Scope and Use
14th	The Airborne Division—Tactical Use Supervision of Training
15th	Organization & Function of Supporting Troops Practice Teaching, Platform Technique
16th	Organization & Function of Supporting Troops Practice Teaching, Platform Technique
17th	Organization & Function of the Services Practice Teaching, Platform Technique
18th	Practice Teaching, Platform Technique
19th and 20th	same as 18th

An analysis of the above program will indicate a reasonably complete course in Training Management as well as complete coverage of the combat divisions of various types and their supporting troops. This program will give an excellent background and sound foundation for the more detailed development of tactics of small units and staff operations.

The course in Training Management is largely contained in FM 21-5 Military Training, and TM 21-250 Army Instruction—these manuals should be in the hands of every officer of the Army regardless of his component or present duty status. They are sound in their doctrine, clear and concise in their presentation, and invaluable as a guide to the planning and presentation of training. They contain sufficient information to prepare any of the subjects listed above in the field of Training Management. The Instructor Training Division of The Armored School, Fort Knox, Kentucky, has prepared an excellent work titled "Army Instructional Methods" which can be obtained from the Book Shop of The Armored School. This document is an excellent supplement to the manuals referred to above.

The necessary background for the other subjects listed can be obtained from current directives of Army Field Forces; The Infantry School at Fort Benning, Georgia; or The Armored School at Fort Knox, Kentucky.

Training aids in the form of charts should, if possible, be made available for each conference. CHARTS STIMULATE THINKING. If not available, they can be prepared by the neighborhood sign writer at very little cost. It is also desirable that mimeographed outlines of the various lectures be prepared. These outlines should be rather complete in form and reproduced, if possible, with the facing page blank so as to permit the officer to take notes during the conference. Diagrammatic outlines are highly desirable to cover the organization of the various type divisions as well as the supporting troops—KEEP THE MIMEOGRAPH MACHINES ROLLING.

Sessions 15 to 20 inclusive include practical work in the form of practice teaching. With the foundation laid in the previous sessions it is suggested that key officers be selected for a 25-minute presentation on further development of the tactical use of the various Combat Teams and Task Forces of the Infantry, Armored and Airborne Divisions. Not only will this give the officers practical experience in subject presentation, but will prove a stimulant to the school as a whole. This procedure has been in vogue at the Constabulary School for the past year and has produced splendid results.

If properly presented, the program authorized above will contain sufficient interest and information of real training value to maintain a satisfactory Unit School for a considerable period of time.

HINTS FOR UNIT SCHOOLS

1. Send out notices in ample time indicating schedule and subjects.
2. Present related subjects—each subject should follow the previous subject in logical sequence and be thoroughly "tied in."
3. Consult your staff and those officers especially interested in the over-all problem of training.
4. Do not permit any one officer or group of officers to hog the session.
5. Do not schedule a Unit School in a high-priced restaurant—with a cocktail bar adjoining.
6. Do not permit a Unit School to drift into a prolonged bull session.

TANK COMMANDER: KNOW YOUR RADIO!

*by Captain W. E. Felty**

IT was well established during the recent war that a functioning radio in a tank is, in many cases, the only difference between defeat or death on the one hand and success and victory on the other. Therefore, as tank commanders, we should know that item of difference —not only to save our own skins but also to save the lives of those under our command.

It is useless for a tank unit commander to try to command his unit from a tank in which the radio is out of order. And it is downright dangerous when a commander who *does not know his radio* tries to command a tank and his unit. It is dangerous to himself, his crew, and the other members of his unit. In fact, it is a much better and far less dangerous situation when the tank commander fails to answer or make a call because of a radio failure than when he so fails because of his lack of knowledge of the capabilities of his radio set. When he knows his radio, he can diagnose the trouble and quickly get it back into operation. But if he doesn't know his radio, he frantically and immediately blames everything and everybody for the no-good and undependable radio in his tank—and fails to realize the cold fact that he is to blame. The tank commander is the crew member who transmits over the radio. The responsibility for its proper operation rests squarely upon his shoulders.

Who are tank commanders? Why, those for whom tanks are furnished—those individuals who command a tank and those who command a unit while mounted in a tank. The division commander, combat command commanders, tank battalion commanders, tank company commanders, tank platoon leaders, and individual tank commanders—all are tank commanders, and each is responsible for the operation of—and actually operates —the radio set in his tank.

There are three phases to the instruction you should receive in learning to know your tank radio. First, there is the classroom type of instruction where you learn the detailed operation of the radio, including the manipulation and adjustment of the various controls. The second phase includes actual operation of the radio; it is usually carried on concurrently with other field instruction, such as tank driving and road marches. The third phase is somewhat different. It must come after you have had some practice in the operation of the tank radio set. It might be called the general review in preparation for the master's degree. It includes the final tips necessary to give you a complete knowledge and understanding of the peculiar capabilities and military characteristics of your tank radio. When you put to practice this information, you are truly a master—you need have no fear of endangering any lives because of your lack of knowledge of your radio. You will then know your radio, and it will surely work for you. Essentially, here are the important points for the third phase:

General Knowledge

The tank commander's radio is the SCR-508 (or SCR-528, having only one receiver). The 508 is neither a delicate instrument to be handled with kid gloves nor one which is to be understood and operated only by specialists. It is your radio, designed and built to be operated by the tank commander. Actually, the 508 is a tough, reliable, efficient, and compact communications unit, designed and built to take about anything any radio set will. It has undergone precise and exacting tests at the development laboratories to make it perform equally well under tropical sun and in the arctic. During World War II, it served tank commanders under every conceivable condition—and it came out with flying colors.

The 508 was designed to meet specific military characteristics called for by the Armored Force—the three most notable of which were that it would have ten instantly available channels with push-button selection, have a range of ten miles under normal conditions, and use the principle of frequency modulation (usually called FM).

The term, FM, should cause no concern. Everybody, during the past four or five years, has heard about FM. Our commercial broadcasting stations are using it today. The fact is, however, that before we had this new FM, no layman ever spoke of AM (amplitude modulation), which we used for years and years. Actually, insofar as the tank commander is concerned, it matter little whether his radio is AM, FM, or PFM. But, since the very term *FM* implies some secret knowledge required in order to understand the 508, let us explain it here and now—AND THEN FORGET ABOUT IT.

FM and What It Does For You

FM isn't hard to understand. If your radio is frequency modulated, your voice makes small but extremely fast changes in the operating frequency of the

*Communications Department, The Armored School, Fort Knox, Kentucky.

set. If, on the other hand, your radio is amplitude modulated, your voice makes fast changes in the set's amplitude, or output power. In other words, in FM your voice wiggles the frequency, while in AM it wiggles the power output.

Here is what FM does for you in your 508: It boosts your useful coverage 30%, and it resists noise interference—a tough problem in armored communication. But good as it is, FM isn't a cure-all. It is the best thing for tank work, but it still has limitations as have all radio communication devices. When you know the limitations of FM and how to spot and lick these limitations in your 508, then you know precisely how to make the 508 go to work for you. That is exactly what the tank commander must know about his radio—how to detect the limitations and know what to do about them. Then he knows his radio. And when he knows his radio, he can put it to work.

The 508 Doesn't Sound Big

After listening to a 510 and a 508 side-by-side and on the same channel, you may feel like saying, "What's the 508 got that the 510 hasn't? The calls sound louder on the 510!" Sure, you're right. At about one or two miles the 510 will sound louder. That is still no indication that it will transmit farther.

The 508 is a tank set, built to be used near lots of noise. It won't SOUND big, but it SENDS big. In fact, it puts out about 30 watts compared to the 510's two. As a test, place a 508 and a 510 out about three miles and at the same point. When they are ready for operation arrange for the 510 to start transmitting (with the 508 silent). Then, while the 510 is still transmitting, have the 508 take the air on the same channel. See which one gets the message through.

How to Side-step Pitfalls

When it becomes necessary to conceal your tank, it is much better (for your radio) to sit in a clump of bushes, in a thicket, in a woods, or just off the crest of a hill, as you normally would in a firing position, instead of at the bottom of a gulley, valley, or depression. Working your 508 close to trees or shrubbery doesn't affect its operation much unless your antenna is actually scraping or touching branches while you are transmitting. This can easily be avoided by a little maneuvering and by getting the tank edged up on a rise, fully protected by trees and bushes, yet with the radio getting out well. Don't worry too much about trees, but don't let the antenna rest against them while you are transmitting. This is a trick of the trade, and you will soon observe it without second thought.

Do not pull down your antenna with a rope or wire. Your antenna is short enough to pass safely under low trees and through underbrush without breakage. Besides, there is a big point in having your antenna vertical. If it's not vertical, it shoots your signals off at an angle. Keep your antenna upright when sending or receiving.

How to Get Your Transmission Across

The announcer in a soundproof studio of a big broadcasting station usually speaks in a low voice. So does a speaker over a local telephone line. Your tank radio, however, operates most of the time under entirely different conditions. Many contacts have failed while the tank is in motion because the commander made the mistake of talking in a low, quiet voice. If you want attention on the air, especially when working any distance, don't mumble quietly into the microphone. Talk up. Speak directly into the microphone, close to it. Avoid talking sidewise or "across" it.

Another reason why many calls have gone unanswered is inattention. Thoroughly memorize the call signs assigned you. Keep an ear out for them. Don't miss the important call. And be sure, too, that you have listened in on the channel for a few seconds before you go on the air. Don't break in on someone—give him a chance.

Did you ever listen to a commercial airline radio net? Not one unnecessary transmission, but every time a call is made—bing—the answer comes right back on first bounce. The moral of this is that you should chew the fat at the table, not at the microphone.

Range and How to Get It

The range of any radio set is like an elastic band. That is, the range may be stretched to twice its length or squeezed to a quarter of its length. Whether the operational range of a radio is stretched or squeezed, and just how much, depends mainly on four things: terrain, frequency, power, and interference.

This goes for the 508. The frequency band on which it operates is from 20 to 27.9 megacycles. Tactically, this is not a long-range band. Nor is it limited to anything like line of sight; but it won't reach out so far that it interferes with distant nets operating on the same radio channel. Instead, the 508 delivers a solid signal in its tactical range, then drops off fast. This hands you three big advantages—it gives you communication where you need it most, it reduces interference with friendly adjacent communication, and it makes a long-range enemy interception much more difficult.

When a commercial radio broadcasting station is put up, days, weeks, and sometimes months are spent in studying and seeking the exact spot for the location of the transmitter. The reason for this is that a few yards one way or the other may add or lose a few thousand listeners. The location of your 508 must be selected with the same kind of careful consideration.

When an important message is to be transmitted to a distant station, you won't have all the time you would like in order to pick the ideal spot; but when you get onto the tricks of good operation, you won't need it. Instead, you will soon be able to tell from a quick glance at the terrain just how your radio is likely to perform. If the range to be covered is two, four, or six miles, most any average terrain will do. But for a 10-mile or 12-mile

shot, you must keep your eye peeled for the good spots.

Good spots are slight rises in the ground. (Dips, gulleys, and underpasses are poor locations.) The bigger the rise, the better your 508 will perform.

Some tank commanders, after experience with the 508, discover that by some clever spot-picking they can set up a long-distance record of, say, 20, 30, or 40 miles, which defies any and all competition. Word of this gets around in a hurry, and other tank commanders, less adept at spot-picking, take their sets into the field, only to have them fall down at 10 or 15 miles. There's an immediate reaction. The 10-mile radio set is suspected of the worst and promptly sent back to radio repair for an injection of something or other. Ever-obliging radio repair then goes to work, only to discover the 10-mile set is perfect and tuned to the hilt. Don't let the rumor that "so-and-so's set will do a regular 30 miles" fool you. It's done with mirrors in the form of hills.

All 508 radio sets, when in working condition and properly tuned, are hopped-up to their limit and put out the same amount of power. When you are in combat, this long-distance contest is something to be forgotten in a hurry. Stick within 10 miles of your contacts. Keep a couple of aces up your sleeve, or in your palm, if necessary. Play close to the vest on this range business.

The End of the Range and the Danger Signal

With some radios of the long-range, low-frequency variety (for instance the 506), as the distance between stations increases, the reception will be good, then possibly bad, indifferent, then maybe good again, eventually dropping to nothing. But this extended and spotty range isn't the way your 508 works. As you approach the end of the range of your 508, you will get a danger signal; reception will become indistinct and noisy. That is your warning not to proceed much farther away from your contacts. You will soon be entirely out of range. What do you do? Stop, look, and listen! *Stop* the tank (if conditions permit), cutting noise interference 50%. *Look* for a rise or hill, which will help another 50%, and *listen* to see if reception isn't much better.

Here is a point to remember: The solid operating range of your 508 stays the same whether it's day or night. The range of some sets occasionally goes haywire between sunrise and sunset, but not your 508. A station which you can contact at noon can be worked equally well at midnight. The 508 is a round-the-clock set.

Incidentally, there is another important point on this range business. As a matter of fact, here is a short lesson in when to play one of those aces that you have up your sleeve. The ace, in this case, is in the form of a simple gadget called the "squelch." It's extremely important that you know the purpose of the squelch and how to adjust it.

The Squelch Control and How to Use It

The receiver of your 508 set is very sensitive and, ordinarily, if no signal or call were being received, it would pick up every random noise on the air and amplify it into a loud roar. Consequently, on long periods of stand-by when you would be listening or waiting for orders and instructions, this roar would be a terrific strain upon your nerves. For this reason, your 508 receiver has a squelch circuit built into it. This knocks out or squelches this continuous noise. Then when the signal comes on, this circuit trips and lets the signal come through—free from noise and static. Essentially, it's a robot telephone operator which rings you when no one is calling. But this squelch is something which must be adjusted with care and watched with an eagle eye, for carelessly and improperly adjusted it will reduce the sensitivity of your receiver and harmfully decrease its range.

The squelch circuit is operated and adjusted by two controls. One control, the SQUELCH-ON/OFF switch, is located in the lower right corner below the receiver push buttons. The second control is the SENSITIVITY control, located in the lower left corner of the receiver panel. The way to adjust this squelch is first to turn the ON/OFF switch to the ON position, then rotate the SENSITIVITY control fully to the right. There will (should) be a roar or noise in the loudspeaker when there is no signal on the air. Then, turn the SENSITIVITY control to the left until this noise *just* disappears—NOT A HAIR MORE. Turn it farther than that and you will clip the range of your receiver. Remember, you won't actually notice that your range has been clipped when working with a near-by set, but farther away it will make a whale of a difference and cause you to miss important calls. Therefore, any time you make a call and hear no answer, try again (here is the lesson on when to play that ace—remember it), and this time be sure that the squelch is turned OFF. And if you hear the weak station, leave the squelch OFF until you are closer to the station. So remember: Any time a station in your net is coming in with a weak signal, turn the squelch OFF and leave it OFF. Don't trump your own ace.

Interference and What To Do About It

When someone builds the perfect radio set, there will be no such thing as interference. uBt until he does, all that we can do in the meantime is to work toward it with the means available. FM is a long step in the right direction, but it's not perfect. The 508 fills a gap, but it has limitations which still leave much to be desired.

In general, any noise which interferes with what you are trying to hear on a radio is chalked up as interference. Strictly speaking, that is correct. But actually, there are a number of types of interference which you may encounter. If you can identify them, that's 85% of the cure. Each has a sound all its own, which you will soon be able to recognize. Here they are:

a. *Direct Interference.*

There is probably nothing more irritating to the tank commander than when someone breaks in on an important message which he is trying to receive over his radio.

This is direct interference, and if it is not carefully avoided, it may easily disrupt the entire operation and effectiveness of a radio net.

This may take one of two forms on your 508. First, a loud and unwanted voice may break in on your channel, completely knocking out the transmission of the man you want to hear. Or, secondly, a warble or wobbling whistle (sort of a "shushing" noise) may come on, disturbing your reception. If the interfering voice is loud and clear and swamps your contact, then the interfering station is much closer to you than is your desired contact, and nothing can be done about it. If the interference takes the form of a warbling whistle, the offending station is farther away than your desired contact. Work the station, if you can. If not, wait. In either case, the trouble is usually due to poor net procedure —someone is sending out of turn. To remedy it, try to identify the offending station; then call him and advise him of the situation.

b. *Sideswiping.*

Sometimes another man's transmitter can interfere with your reception when it's operating on an adjacent channel, especially when the vehicles are close together. For example, a 508 in a tank near by may be sending on channel 41 while you are receiving on channel 42, and breaking up your reception by coming in on your channel—not clearly, yet enough to disrupt your reception. This is called sideswiping. The remedy is to separate the tanks. Usually, 200 yards will do the trick.

c. *Ignition Interference.*

The greatest handicap which any radio that is carried and operated in a vehicle ever meets is the fact that it has to be near spark plugs, their associated wires, and the high voltages necessary to produce a hot, fat spark. Each one of these sparks is a wicked discharge which, if given half a chance, produces a first-class radio signal quite capable of being transmitted miles on its own if it were hooked to an antenna. Therefore, every vehicle must have a thorough going-over before a radio is installed in it, and its spark plug and ignition system must be carefully worked on. This process is called "suppression." Most vehicles have received ignition suppression treatment before leaving the factory. But breakage is always possible in the field.

If your radio is unusually noisy, it may not be your radio's fault. Ignition noise from spark plugs has a unique sound. When the engine is idling, sharp staccato cracks sounding like miniature machine-gun fire will come from the speaker and headphones. The faster the engine is run, the faster the sharp reports will occur. Finally, when the engine is gunned to its limit, the crackings will occur so rapidly that they sound like one loud continuous roar. If this type of noise occurs, check the suppression system—something is loose, broken, or disconnected.

Spark plug and ignition interference is something over which your 508 holds a big club. It will do little or no receiving of ignition noise, provided you are listening to strong incoming transmissions. BUT HERE IS WHERE THE DANGER LIES. At the end of your range, say 10 miles out, your receiver will be scraping the ceiling for a signal. If your spark plugs are noisy, they will smack your receiver hard, and the result will be nothing but noise. (WATCH THAT SQUELCH!) So check your suppression system. Watch it closely.

Final Tips

As final tips, here are some things to remember; and if you put them into practice, your 508 will surely go to work for you.

(1) If you want more range, head for a good location. But don't expect too much range. Keep an ace up your sleeve. Play close to the vest with your range.

(2) When signals start getting noisy, you may be running out of range. CHECK THAT SQUELCH.

(3) Keep your antenna vertical. If you don't, it will put a curve on the ball. Pitch 'em straight.

(4) To win contacts and influence your listeners —SOUND OFF!

(5) Keep an ear out for weak calls—they may be for you, and they may mean business.

(6) Trees won't bother your transmitting. Use them for concealment if you can, but when you transmit, don't let the antenna touch the branches.

(7) If you are receiving a lot of cracking noises, check the suppression system—it may be leaking.

(8) Poor reception or transmission MIGHT occur as a result of combined reflections from near-by trees or hills. MOVE 50 feet or so (AND YOU MAY GET THE SUN OUT OF YOUR EYES).

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Communications At The Armored School

A MODEL BATTERY ROOM

*by Captain Kenneth L. Thompson**

A VISITOR in the Communication Department, The Armored School, Fort Knox, Kentucky, would eventually find himself in one of two laboratories of the Radio Repair and Maintenance Division. This division consists of technically qualified officer, enlisted and civilian instructors who teach second echelon radio maintenance and repair to Armored Communication Officers (MOS 0200), Armored Communication Chiefs (MOS 542), and Armored Radio Repairmen (MOS 648). The courses employ similar equipment. This article will, however, discuss the instruction and power requirements of the Armored Radio Repairmen.

The program of instruction extends over a period of 18½ weeks. Instruction falls in two types: the classroom conference and the laboratory exercises. The laboratory consists of two benches each identical in size and shape, with combined facilities capable of handling a student load of fifty. Each position has an A-C, 110-volt power outlet, 6.3 volts A-C connectors, 0-300 volts D-C connectors and 12-volt D-C, high amperage studs. This laboratory is used by the student for the purpose of applying the technical theory studied during conference periods to actual radio training aids, radio receivers, and radio transmitters. During the instruction of electrical and radio fundamentals, the students use breadboards, which consist of actual radio parts and schematic diagrams mounted on small plywood panels. The instructions for wiring these breadboards are issued to the students in the form of work sheets. Since these breadboards, when properly connected, will actually operate, it is necessary that they be furnished electrical power. Such power is obtained by using a conventional full wave rectifier power supply incorporating a "brute force" filter system, which supplies the voltage necessary for the operation of the circuit elements.

The instruction in fundamentals is followed by practical work with radio equipment which is common to armored units. Circuit analysis, testing, alignment, and servicing of these radio sets are the main subjects covered. These radios normally require a 12- or 24-volt, D-C power source which is furnished by the vehicular battery. In the laboratory, however, the task of moving heavy storage batteries from the charging room to each student position presented a definite problem; therefore, some other system of power distribution was necessary.

The development of a central battery room, capable of supplying each position of the laboratory benches with adequate voltage and amperage, was the desired solution.

The establishment of a central battery source was accomplished by using a separate room adjacent to the laboratory which houses the batteries, chargers, and the necessary maintenance equipment, and includes a forced draft ventilation system. The battery system itself includes four banks of 12-volt batteries, with provision for connecting each bank to a separate tungar charger by a series-parallel bus bar device, provision for connecting each bank to a distribution and monitoring panel by a parallel bus bar device, and a "jumper" method of connecting any two banks to the laboratory positions. The distribution and monitoring panel includes an electronic metering device which indicates the closed circuit voltage of each bank. Panel lamps are used to indicate proper connection from the banks to the laboratory positions. Each bank is capable of furnishing a normal drain under maximum load of 1200 amperes current. If more current is necessary because of an increase in the number of radio sets being used, two or more banks may be connected in parallel. However, the maximum student load of 50 men all operating sets would not exceed the permissible current drain from two banks in parallel.

One man is required to maintain this system. His duties include care and cleaning of each battery, testing specific gravity of each cell and maintaining continuous records of the condition of each cell. He also must arrange the bus bar connections for either charging or discharging (loading) each bank.

This method of supplying D-C power to the laboratories has saved a great deal of manhandling and a tremendous amount of time and has eliminated danger to personnel from acid burns or shock. Its existence is a necessity, and it has paid off in all respects.

*The Armored School, Fort Knox.

Armored Division Associations

1st Armored Division

AS we go to press the Old Ironsides Division is holding its first annual reunion at Louisville, Kentucky for the three-day period 15, 16, 17 July. Headquarters were announced for the Brown Hotel, and the convention committee under Colonel L. V. Hightower had arranged a program of interest to all former members of a grand combat division.

One of the high points of business discussion as the association met undoubtedly was the completion and publication of the history. In the next issue of the Journal we shall carry the story of the convention.

4th Armored Division

The 4th Armored Division Association has had an active period recently. On 15 June, at Watertown, New York, a Tank Memorial was dedicated to this famous division. The dedicatory address was made by General Jacob L. Devers. Other guests include General Clarke, former CG and present President of the Association, and Colonel England, CO at Pine Camp. Hosts for the occasion were Mayor Henry A. Hudson of Watertown and Commander Robert L. Watts of American Legion Post 61.

The Association held its second annual reunion at Boston on the first three days of July. Principal speaker at the final banquet was the Honorable Henry Cabot Lodge, Jr., Senator from Massachusetts. Lieutenant Colonel Graham Kirkpatrick was toastmaster.

6th Armored Division

Louisville, Kentucky is in for it again as the 6th Armored Division Association descends on the city for a three-day convention to center around the Seelbach Hotel and to cover the dates 30 July through 1 August. If you want to make last minute arrangements, the person to contact is Lieutenant H. C. Smith at AFF Board Number 2 at Fort Knox, Kentucky.

The convention will include unit get-togethers, a business meeting, a ladies' luncheon and a banquet and ball with floor show.

7th Armored Division

Former members of the 7th, and in particular of Combat Command B, will be pleased to know that in late June the Department of the Army approved the recommendation for a Distinguished Unit Citation for CCB for combat action from 17 to 23 December 1944, inclusive, at St. Vith, Belgium. The units within the citation include Headquarters and Headquarters Company; the 17th and 31st Tank Battalions; the 23rd and 38th Armored Infantry Battalions; the 87th Cavalry Reconnaissance Squadron (M) (less Troop D); the 275th and 434th Armored FA Battalions; the 965th FA Battalion; the 168th Engineer Combat Battalion; the 3rd Platoon of Company F, 423rd Infantry Regiment; Company B, 33rd Armored Engineer Battalion, and Company A, 814th TD Battalion (SP).

The Armored Cavalry Journal congratulates CCB of the 7th Armored Division.

11th Armored Division

Most members of the 11th will have received their Newsletter, announcing the second annual convention which will be held in New York City on August 12th, 13th and 14th. Headquarters will be the Commodore Hotel. Business will include the election of officers, selection of next year's convention site, and discussion on the erection of a school at Bastogne. There will be a full program of entertainment for the ladies and events will click off regularly up to the big Dinner-Dance on the 14th.

Thunderbolt: The History of the 11th Armored Division, is in everyone's hands. For those who have not ordered a copy we suggest that you do so at once. Your prompt payment will bring you a fine book about a fine division: in addition, it will assist in making possible the presentation of a free copy of the history to the next of kin of your comrades who fell in action.

For convention information write to George D. Halprin, The Pen-Rite Corporation, 744 East 138th Street, New York 54, N. Y. For histories and dues write the association at 1719 K Street, N. W., Washington 6, D. C.

1st Cavalry Division

The First Cavalry Division Association is in a favorable position in the fact that the division is still in active service. This allows continuing support to the activities. When the First holds its convention at El Paso, Texas, on November 8, 9 and 10, the division will provide combat veterans still serving with it with the opportunity to attend the convention on a leave basis. A survey is in progress at the division's occupation station in Japan to find out the number of men eligible to join the party on the journey to the "doings" down in Texas.

The Armored Cavalry Journal carries as much information about the various division associations as it receives. If you feel there is more attention given to one than another it is the result of the organization, enthusiasm and publicity available from some sources and not forthcoming from others. We would like to carry general information on all associations in Armored Cavalry, including Armored Divisions, Cavalry Regiments and the separate units. Let us hear from you!

The Armored Cavalry Journal
BOOK SECTION

THE GATHERING STORM. By Winston Churchill. 784 Pages. Houghton Mifflin. $6.00.

A review by
WILLIAM GARDNER BELL

From the World's Senior Statesman comes the first installment of the history for which we have been waiting. Perhaps you sampled this work in *Life's* 50,000 word teaser, or via the more substantial 93,000 words dished up by *The New York Times*. Or perhaps you dislike samplings and preferred to wait for the release in late June by Churchill's publishers of the complete, nearly quarter-million word text.

The Gathering Storm is the first of five (possibly six) volumes in a work titled "The Second World War." Mr. Churchill states in his preface that he regards these volumes as the continuation of the story of the First World War covered in his previous books, *The World Crisis*, *The Eastern Front*, and *The Aftermath*. The whole is designed to "cover an account of another Thirty Years' War."

This first volume is broken down into two books respectively labelled "From War to War" and "The Twilight War." With appendices it runs over 780 pages. Truly a monumental thing.

The Moral of the Work is typically Churchillian;

In War: Resolution
In Defeat: Defiance
In Victory: Magnanimity
In Peace: Good Will

The stated Theme of the Volume is an indictment in which we all must share:

> "How the English-speaking peoples through their unwisdom, carelessness, and good nature allowed the wicked to rearm."

The Gathering Storm is potent history by a master historian who lived within and assisted in the making of the history of which he writes—a connection resulting in the amazing situation whereby the historian writes about himself—the statesman—with a fundamental detachment that leads to such assessments as the one associated to the cancellation of a pending first-meeting of Churchill with Hitler in 1932; a meeting posed through the cultivating liaison of "Putzi" Hanfstaengl, and one which apparently chilled and fell through because of certain of Churchill's remarks to the emissary concerning Hitler's attitude toward the Jews. "Thus," says Churchill, "Hitler lost his only chance of meeting me." With this statement, Churchill the historian places in their proper relation the two men Churchill and Hitler.

This is history doubly strong by virtue of its recent transpiration, and by the firsthand familiarity of the reader to its development. Book One within the volume covers the between-the-wars period, 1919 to 1939. From a springboard chapter based on the Follies of the Victors, at Versailles, Churchill proceeds through the high decade of peace to 1931; the remaining part of the volume, Book Two, is the step-by-step retrogression in the march to a new war; a description of the actions of the aggressors, balanced against the apathy and negation of the appeasers. The title of this latter Book is selected from a Chamberlain source; an effective coinage, and one for which Churchill gives his colleague full credit.

Book Two is much the easier reading. It covers the darkening period within the dates 3 September 1939 through 10 May 1940, within which came the fall of Poland, the evolution of the submarine warfare, a series of important naval engagements, and the unfortunate ventures in Norway. This Book and the volume climax with the elevation of Mr. Churchill to the Prime Ministership, bringing to the statesman "a profound sense of relief." The position brought with it "the authority to give directions over the whole scene." As Mr. Churchill sums it up: "I felt as if I were walking with Destiny, and that all my past life had been but a preparation for this hour and for this trial."

The Gathering Storm is bristling with excerpts from Churchill's speeches, letters and writings, items which serve as a documentation of his statesmanship and of his consistent and unerring calling of the turn. He is unsparing of self-criticism, quick to assume a full measure of responsibility, and most kind with his opponents, most of whom fare badly enough in the documentation and in the light of events, despite his benevolence. Churchill on Chamberlain may well go far to redeeming the latter in the eyes of many who adopted casual, hasty judgments without a full knowledge of background. Therein lies much of the value of history.

The political side of the story is interesting. How obvious it is that the party in power is not always right, nor the people who placed it there! How plain it is that politics and politicking can be most harmful! Real injury can materialize through the wishful thinking of the people.

A comparison of the situation then and the situation now cannot be denied. With a little juggling both sets of events could march in the same parade. Britain's relation then to the Channel, Central Europe, the stage of technology and the state of world politics has a definite affinity to America's relation to the Atlantic, Eurasia, the stage of technology, and the state of world politics today. We might secure to ourselves many benefits through a certain ability to call the play. Certainly the United Nations is undergoing some buffetings similar to those that battered the League.

To what extent are we riding a merry-go-round? Some inevitabilities poke through. Churchill states the caution

WELLES AND EDEN

early in Book Two: "The advantage which a Government bound by no law or treaty has over countries which derive their war impulse only after the criminal has struck, and have to plan accordingly, cannot be measured. It is enormous." He was speaking of Hitler's Germany! His qualification. . . . "On the other hand, unless the victory of the aggressors is absolute and final, there may be some day a reckoning." That reckoning came. We were in on it.

Volume Two in the Churchill work is now in final proof. Titled *Their Finest Hour* it will be published around the end of the year. Volume Three is under the Churchill pen and nearing completion. The five volumes are scheduled for publication at approximately eight-month intervals. We may look forward with high anticipation to the succeeding volumes in which will be introduced our part of the scheme of history. Through Winston Churchill's work we are sitting in on history's verdict.

* * *

WE NEED NOT FAIL. By Sumner Welles. 142 Pages. Houghton Mifflin. $2.50.

Sumner Wells and Houghton Mifflin have achieved almost a newspaper quality in the release of this mighty little book on the warmest of the hot war areas in this troubled universe. Although it is primarily a book about Palestine, it is also a book about the United Nations and American Policy.

Looking first at the historical picture, Mr. Welles has opened the book with a Chronological Table, embracing events as they affect the Holy Land and its peoples from the year 135 AD through May 14 of this year, the date of proclamation of the new Jewish State of Israel and of our *de facto* recognition.

With the table as an opener, it takes Mr. Welles only two pages to set forward the record. He offers a factual background to show that "of the three thousand years that have passed since the Israelites first entered the Holy Land, the Jews have been a dominant force in that region for some twelve hundred and the Arabs but some four hundred years."

As well as being a strong case in favor of Zionism and partition, this is a critique on the United Nations and a criticism of American policy on the Palestine issue. The author suggests that the Palestine situation contains all of the ingredients for being to the UN what Manchuria, the Rhineland, Ethiopia and Munich were to the League of Nations, and therefore to the world. Two points are employed by our former Under Secretary of State. He supports fully the validity of the Balfour Declaration as a lawful action by a nation acting on the authority of the appointing body, the League, in the mandate capacity. He stresses the substantial contribution of the Jews to the betterment of the disputed land.

Criticism of our policy on partition is severe. We are reminded that this is one difference in which there has been no Soviet veto with which to contend. The close analysis of our course of action on Palestine is embarrassing. The view of our policy and of the effect on our country and the union of countries of this whole question is far from quieting. As set down by Mr. Welles, by pursuing a certain line, we need not fail.

—W. G. B.

THE PALESTINE PROBLEM

What is the Palestine issue? What is its background? What have the Powers done about it, confronted with the problem of that sad and holy land?

These questions form the primary substance of "We Need Not Fail" in which Sumner Welles examines the age-old bases of the conflict which is now so concerning the world and in which he asks that the Powers make a decision worthy of their greatness and of the world's hopes.

And because so many of these hopes are centered on the United Nations, Mr. Welles makes inquiry into the weaknesses of this organization. And because so many see in this organization the culmination of their hopes, he points out a path which he feels would make nations more truly united and justify these hopes.

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By SUMNER WELLES

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The Rt. Hon. Anthony Eden began his political career following World War I and since that time his public utterances have reached wide audiences through press and radio. Now selected and arranged for publication, they constitute a permanent record of far-reaching diplomatic events observed, analyzed, and influenced by Britain's Foreign Secretary.

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BOOK DEPARTMENT

Armored Cavalry Journal

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WARPATH AND COUNCIL FIRE. By Stanley Vestal. Random House. $5.00.

Stanley Vestal, who in private life is Walter Stanley Campbell, Professor of English at the University of Oklahoma, and author of a number of books on American Frontier History, has written another excellent book on the campaigns of the Plains Indians during the period 1851 to 1891. Marching through its pages are the great figures, both white and Indian, who lived those years of struggle. This is a story for the person interested in American History, the military and straight adventure.

GETTYSBURG. Edited by Earl Schenck Miers and Richard A. Brown. 308 Pages. Rutgers University Press. $3.50.

There is a fiction style to *Gettysburg*. The treatment is pleasing; much different from usual war history. A substantial story is told from other than the straight military viewpoint. There is an intimacy with the conflict that is not found in pure military documentation. This has the basis of human emotion in it, with the reader plunged deeply into the feel of Gettysburg and walking the events to the finish.

In the early pages of the book the military reader may feel somewhat annoyed by the lack of detailed maps and dispositions to complement the text. That feeling tapers off as the grip of the story embraces the reader and the realization comes that this is not that kind of story. Harold C. Detje's maps are entirely adequate to the purpose of this story. They are graphic representations falling neatly into character.

The wide variety of sources drawn upon in the assembling of the story includes young and old, male and female, civilian and soldier, senior and junior, Blue and Gray. The composite result is unique war history. The frank analysis in history touching upon the personalities of military commanders and their relation to ability and to their men is interesting. Positive and negative factors stand forth, and this kind of thing may well set a pattern in the military scheme today.

War today embroils a greater number of Billy Baylys and Sallie Broadheads than did war in their time. The people of Warsaw, Manila, Stalingrad, Rotterdam or Leghorn could tell endless tales of the war, and the people of Jerusalem not so many days ago. How all-inclusive war has become! Today's battles could hardly be written of with the detachment of the civilians fringing the Gettysburg field. It is something to ponder, the effect such accounts of war as these will have on the future of war.

DUNKIRK. By A. D. Divine. E. P. Dutton. $4.50.

Dunkirk stands out among the famous evacuations of history by virtue of the fact that it was unplanned, "a brutal, desperate adventure forced upon us by the most dire disaster, carried out under the eyes of an enemy flushed with victory . . ." It was a triumph for all concerned. This book tells in detail how 338,000 men were lifted from the beaches, a good ten times the supposedly generous estimates of those who ventured to guess. You'll live every page.

The Best Sellers

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Fiction

June 20	June 27	July 4	July 11		
1	1	1	1	The Naked and the Dead. *Mailer*
3	3	3	2	The Golden Hawk. *Yerby*
2	2	2	3	Pilgrim's Inn. *Goudge*
5	4	4	4	Peony. *Buck*
11	7	7	5	The Foolish Gentlewoman. *Sharp*
4	5	5	6	Raintree County. *Lockridge*
			7	Melissa. *Caldwell*
	14	11	8	The World Is Not Enough. *Oldenbourg*
6	6	6	9	Parris Mitchell of Kings Row.
7	9	8	10	Bright Feather. *Wilder*
10	10	14	11	The Bishop's Mantle. *Turnbull*
15	13	10	12	Asylum for the Queen. *Jordan*
8	8	9	13	Eagle in the Sky. *Mason*
		13	14	The Flames of Time. *Kendrick*
12	11	12	15	No Trumpet Before Him. *White*
13			16	The Time Is Noon. *Haydn*

General

1	1	1	1	Peace of Mind. *Liebman*
	6	4	2	How to Stop Worrying and Start Living.
3	3	2	3	Sexual Behavior in the Human Male.
		8	4	The Gathering Storm. *Churchill*
2	2	3	5	Civilization on Trial. *Toynbee*
5	5	7	6	Malabar Farm. *Bromfield*
6	7	5	7	The Stilwell Papers. *Stilwell*
4	4	6	8	Jim Farley's Story. *Farley*
		13	9	Our Unknown Ex-President. *Lyons*
7	8	9	10	The Memoirs of Cordell Hull. *Hull*
11	14		11	All Things Considered. *O'Brien*
16	12		12	Inside U. S. A. *Gunther*
			13	Gettysburg, *Miers and Brown*
8	11	12	14	Roosevelt and the Coming of the War.
14	16		15	Power Golf. *Hogan*
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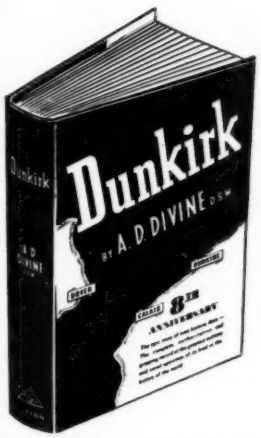

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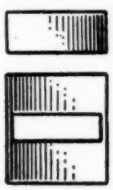

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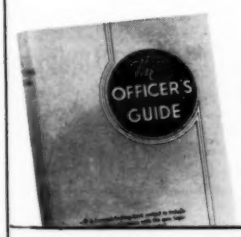

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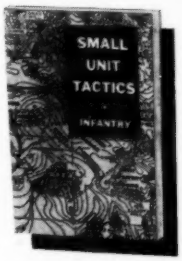

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6th Armored Division	Published	$2.00
7th Armored Division	Contemplated	Thru ACJnl
8th Armored Division	Published	Unknown
9th Armored Division	Published	Unknown
10th Armored Division	Published	Unknown
11th Armored Division	Just published	$5.00
12th Armored Division	Published	(Out of print)
13th Armored Division	Published	Not available
14th Armored Division	Published	$5.00
16th Armored Division	None contemplated	
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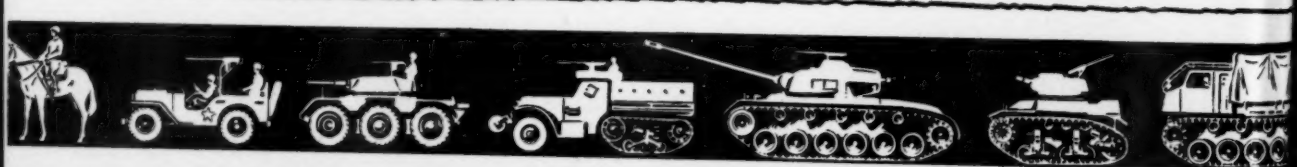
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